BLM LIBRARY
88016312

CONCEPT OF DISCOVERY AND MINERAL IN CHARACTER AS RELATED TO SMALL GOLD MINES

BY

J.R. EVANS, (RG 431; CEG 958) Senior Technical Minerals Specialist
BLM, California State Office, Sacramento

R.M. WAIWOOD, Geologist
BLM, Bakersfield District Office

R.E. REID, Geologist
BLM, California State Office, Sacramento

Prepared for the California Gold Symposium
Hotel El Rancho, West Sacramento, California
October 14 - October 17, 1985

Sponsored by the Nevada Institute of Technology, Reno, Nevada, and
the California Division of Mines and Geology, Sacramento, California

TN
223
.E92
1985
c.2

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

#14766258

88016312

TN
223
.E92
1985
c.2

CONCEPT OF DISCOVERY AND MINERAL IN CHARACTER AS RELATED TO SMALL GOLD MINES

BY

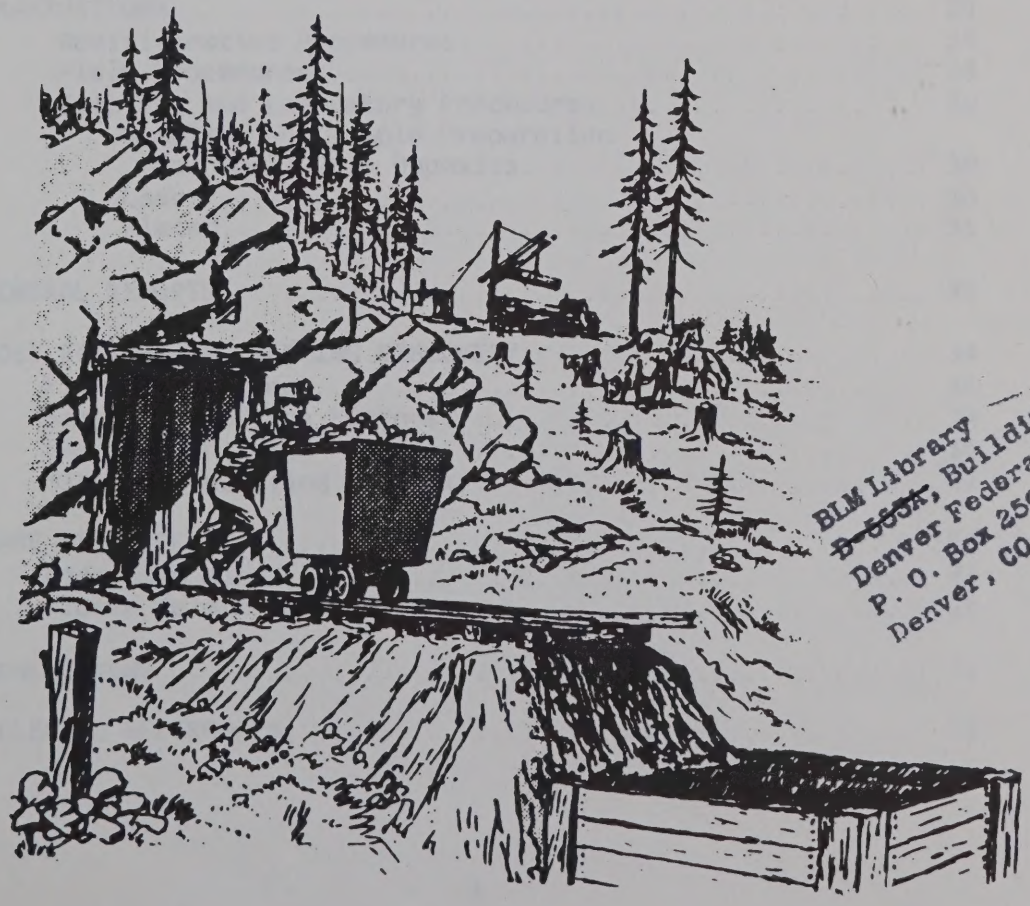
J.R. EVANS, (RG 431; CEG 958) Senior Technical Minerals Specialist
BLM, California State Office, Sacramento

R.M. WAIWOOD, Geologist
BLM, Bakersfield District Office

R.E. REID, Geologist
BLM, California State Office, Sacramento

Prepared for the California Gold Symposium
Hotel El Rancho, West Sacramento, California
October 14 - October 17, 1985

Sponsored by the Nevada Institute of Technology, Reno, Nevada, and the California Division of Mines and Geology, Sacramento, California



BLM Library
~~D-555A~~, Building 85
Denver Federal Center
P. O. Box 25047
Denver, CO 80225-0047

DENVER CO 80250-0003
P. O. Box 25003
Denver Federal Center
Building 50
DENVER, CO

CONTENTS

Page

INTRODUCTION..... 4

DEFINITION OF (GOLD) LODE OR PLACER MINING CLAIMS..... 4

DISCOVERY..... 4
General..... 4
Prudent Person Test..... 5
Marketability Test..... 5
A New Concept of the Marketability Test..... 7
Discovery on Each Claim..... 8
Physical Exposure Required..... 10

MINERAL IN CHARACTER, THE 10-ACRE RULE, AND PLACER CLAIMS... 10
General..... 10
Style..... 11
Geologic Inference..... 11

SOME FEDERAL REGULATIONS..... 12
General..... 12
Regulations at 43 CFR 3830 through 3870..... 12

ADMINISTRATIVE PROCEDURES, FIELD AND LABORATORY EXAMINATIONS..... 29
Administrative Procedures..... 29
Field Procedures..... 29
Sampling and Laboratory Procedures..... 30
Sampling and Sample Preparation for Small Gold Deposits..... 30
Lode..... 30
Placer..... 31

MINERAL REPORTS..... 32

COST FACTORS INFLUENCING DISCOVERY..... 34
Financing Factors..... 34
Sampling Practice Factors..... 34
Sampling Analysis Factors..... 36
Mineral Processing Factors..... 37

CASE HISTORIES..... 38
Lode Gold Mine..... 38
Placer Gold Mine..... 53

CONCLUSIONS..... 72

SELECTED REFERENCES..... 73

INTRODUCTION

The purpose of this paper is to discuss briefly the legal and technical concepts of discovery of a valuable mineral (gold) deposit on Federally administered land under Federal laws and regulations. Determination of discovery, and mineral in character for placer claims, is the essence for their validity. Therefore, we will describe the field, laboratory, and report techniques and procedures that we use to determine discovery on mining claims and the mineral in character nature of 10-acre plots within placer mining claims. To illustrate these concepts as applied to small lode gold and placer mines two abridged case histories are given.

DEFINITION OF (GOLD) LODE OR GOLD PLACER MINING CLAIMS

A (gold) lode mining claim is a claim that covers a valuable lode, vein, ledge, tabular deposit or other rock in place between definite walls. Before authoritative definition miners considered a lode a formation by which the miner could be led or guided. The term lode is an alteration of the word lead, and whatever the miner could follow expecting to find ore was his lode (see Bureau of Mines Dictionary of Mining, Mineral, and Related Terms, 1968).

(Gold) placers are claimed under placer mining claims. Claims called placers are defined at 30 USC 35; RS 2329; Act of March 3, 1891; 26 Stat. 1097 as:

> ...placer, including all forms of deposit, excepting veins of quartz, or other rock in place, shall be subject to entry and patent, under like circumstance and conditions, and upon similar proceedings as are provided for vein or lode claims...

DISCOVERY

General

Mineral deposits on Federal land are in one of three groups, locatable, salable, or leasable. As the concern here is only with locatable minerals, salable and leasable minerals will not be discussed.

Locatable minerals occur in valuable deposits on Federal land open to exploration and location of mining claims under the General Mining Law of 1872 - Act of May 10, 1872 (30 USC 22, as amended). The discovery of a valuable mineral deposit properly located under appropriate Federal and State laws is essential for a valid mining claim location. It is important to note that the location of mining claims comes after the discovery of minerals (43 CFR 3811.1, and 43 CFR 3831.1).

It is difficult to prepare a complete list of minerals that occur in locatable deposits, because some mineral deposits that are locatable on Federal lands are not locatable on the Outer Continental Shelf (offshore deposits) nor on many acquired Federal lands - these minerals are leasable. For example, valuable placer gold deposits are subject to location on open Federal onshore land that is not acquired, but are subject to Federal leasing in offshore deposits.

Mining location procedures can be confusing, but what constitutes a discovery of a valuable mineral deposit can be even more confusing. A major problem is that Federal statutes do not provide a definition of, or describe what constitutes a valuable mineral deposit. The lack of a statutory definition has resulted in judicial and administrative declarations.

Prudent Person Test

Probably the best known test of discovery was put forth in a Land Decision of the Department of Interior in 1894 - Castle v. Womble, 19 LD 455 (1894). This famous prudent person test of discovery of a valuable mineral deposit was given as follows:

> ...where minerals have been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success in developing a valuable mine, the requirements of the statutes have been met.

Marketability Test

In 1968 the Supreme Court approved, as a complement to the Prudent person test of discovery, a pre-existing concept - the marketability test. The marketability test concept has been used by the Department of Interior for widespread non-metallic minerals since Layman v. Ellis, 52 LD 714 (1929). In Foster v. Seaton, 271 F2d 836 (DC Cir. 1959) the test was further upheld.

In U.S. v. Coleman, 390 US 602-603 (1968) the Supreme Court said:

> Under the mining laws Congress has made public lands available to people for the purpose of mining valuable mineral deposits and not for other purposes. The obvious intent was to reward and encourage the discovery of minerals that are valuable in an economic sense. Minerals which no prudent man will extract because there is no demand for them at a price higher than the cost of extraction and transportation are hardly economically valuable. Thus, profitability is an important consideration in applying the prudent-man test, and the marketability test which the Secretary has used here merely recognizes this fact.

> Indeed, the marketability test is an admirable effort to identify with greater precision and objectivity the factors relevant to a determination that a mineral deposit is "valuable". It is a logical complement to the "prudent-man test" which the Secretary has been using to interpret the mining laws since 1894.
>
> Finally, we think that the Court of Appeals' objection to the marketability test on the ground that it involves the imposition of a different and more onerous standard on claims for minerals of widespread occurrence than for rarer minerals which have generally been dealt with under the prudent-man test is unwarranted. As we have pointed out above, the prudent-man test and the marketability test are not distinct standards, but are complementary in that the latter is a refinement of the former. While it is true that the marketability test is usually the critical factor in cases involving nonmetallic minerals of widespread occurrence, this is accounted for by the perfectly natural reason that precious metals which are in small supply and for which there is a great demand, sell at a price so high as to leave little room for doubt that they can be extracted and marketed at a profit.

It is clear that the consideration of economic value for metallic as well as non-metallic minerals is now the critical factor for discovery.

If there was any doubt about the above statement it should be put to rest based on a recent Federal 10th Circuit Court Decision in Roberts v. Morton, 549 F2d 163 (10th Cir. 1977) the Court said:

> We agree, however, with the district court's view that marketability at a profit remains an essential consideration in the case. We are persuaded that the Court's statement in Coleman, cited above, does not mean that marketability has no relevance where a discovery even of a precious metal is involved. See Converse v. Udall, 399 F2d 616, 621 (9th Cir). It is still proper here that the Secretary "take into account the economics of the situation". Id at 622. The required showing by a claimant, however, is that at the time of discovery there is a market sufficiently profitable to attract the efforts of a a person of ordinary prudence.

The marketability test refers to present ability to market and not the present marketing of materials from the claim. However, speculative future marketability cannot be relied on, only economic circumstances which are rationally predictable from present known facts. United States v. James J. Heldman et al., 14 IBLA (Nov. 27, 1973); United States v. Ethel Schell Larson and Minerals Trust Corporation, 9 IBLA 247 (Feb. 2, 1973); United States v. Menzel G. Johnson, 16 IBLA 234 (July 10, 1974); Ideal Basic Industries Inc. v. Morton C.A. Alaska 1976, 542 F. 2d 1364.

Therefore, the claimant must show that he can sell material from the claim at a profit. It is not required that he has or is selling material at a profit.

A New Concept of the Marketability Test

In 1983 the Interior Board of Land Appeals (IBLA) presented a long overdue concept regarding marketability. In Pacific Coast Molybdenum, 78 IBLA 20-29 (1983) the Board said:

> [2] Appellants' argument crystallizes a problem inherent in the application of the marketability rule. While no prudent man would expend time and money to develop a mine where it is clear that there is no market for the mineral or the price that could be obtained is obviously less than the cost of production, the question of prudence becomes more difficult when the mineral involved is subject to great price volatility. Many minerals, including molybdenem, show marked price elasticity for both the demand and supply fluctuations. Thus, either increased demand or decreased supply in the short term can often result in elevated prices which cannot be sustained over a long period of time. The same, however, is true on the downside. Molybdenum, which is primarily used in steel production, is particularly price sensitive to developments in the steel industry. The sharp 1981-1983 recession, with its attendant massive decline in steel production, necessarily depressed molybdenum prices on a world-wide scale.
>
> "Present marketability" has never encompassed the examination of either cost or price factors as of a specific, finite moment of time, without reference to other economic factors. Rather, the question of whether something is "presently marketable at a profit" simply means that a mining claimant must show that, as a present fact, considering historic price and cost factors and assuming that they will continue, there is a reasonable likelihood of success that a paying mine can be developed. For example, if a claimant has located a deposit of gold which can be mined at a profit, if the price of gold is $500 an ounce, and the evidence is such that there is a reasonable likelihood of sufficient quantity and quality to justify development, that claim can be deemed valid despite the fact that on any specific day gold may be selling at $420 an ounce. This is so because a selling price of $500 an ounce for gold is both within the historic range and expectations of it reaching that level again can be justified as a present matter. On the other hand, if the deposit, because of expenses associated with mining and beneficiation, requires a selling price of $1,500 an ounce, such a claim does not exhibit present marketability. So elevated a price for gold does not represent any relevant historic range and is essentially based on speculation or unsupported hope. It may be expectation, but it is an unreasonable one given present facts. See United States v. Denison, 76 I.D. 233, 239 (1969).

BLM Library
D-553A, Building 50
Denver Federal Center
P. O. Box 25047
Denver, CO 80225-0047

All the above means that a miner is not saddled with the daily price quote of gold, or other commodities, but can take a perspective view of average prices over an appropriate period of time. This concept should be applied in all evaluations of discovery (and mineral in character).

For example, J.R. Evans has plotted average monthly and yearly gold prices with percentage of change from previous year (Figure 1). After a pragmatic study of Figure 1 (pg.9), it is apparent that there is a marked variation in the average price of gold, but it has not dropped below $360 per troy ounce in the past 5 years. Even though the present price is below this we think that the $360 figure is within the historic price range and that the price will rise again to $360 or more, in the near future. The chart is being kept current on a monthly basis and prices will be reevaluated periodically.

Discovery On Each Claim

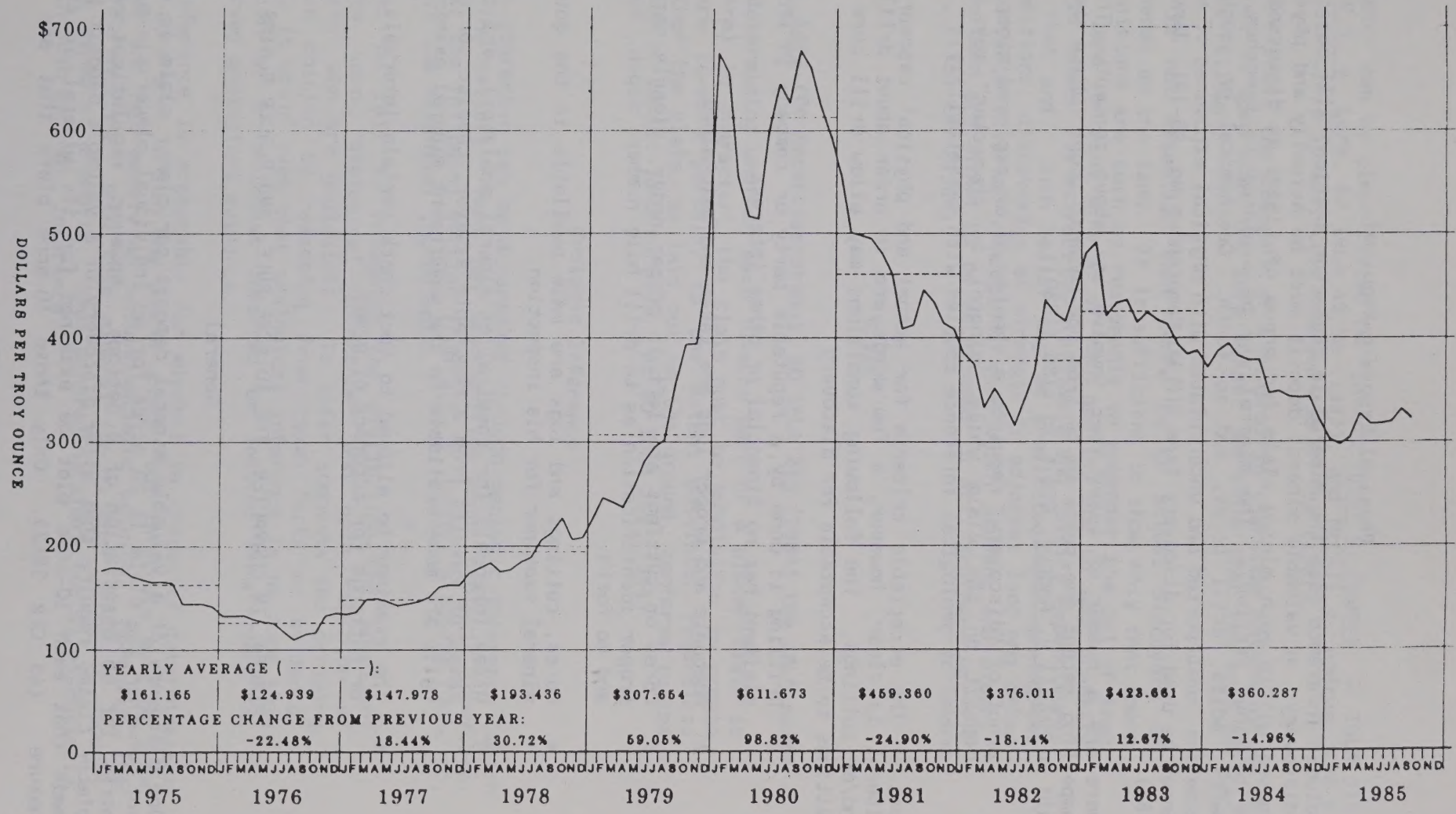
Each claim is to have a discovery within its boundaries, even if two or more claims are contiguous. See Ranchers Exploration and Development Co. v. Anaconda Co., 248 F. Supp. 708 (DC Utah 1965).

This concept is not new for in Waskey v. Hammer, 223 US 85, 91 (1912) the court said: "discovery without the limits of the claim, no matter what its proximity, does not suffice".

However, we have taken a perspective look at this situation where large, low grade gold deposits or other metals deposits are disseminated over a wide area under numerous mining claim. No one claim could support the large capital investment required to develop such a deposit. A group of claims would be necessary to support an economic operation. A large deposit of certain reasonable cut-off grade with a certain number of tons is clearly necessary for a successfully developed mine. The BLM has taken a reasonable view of the problem and is not adverse to considering this concept for validity examinations.

AVERAGE MONTHLY AND YEARLY GOLD PRICES WITH PERCENTAGE CHANGE FROM PREVIOUS YEAR

Handy & Harman Quote in dollars per troy ounce



Physical Exposure Required

Geologic inference (see the Mineral In Character section) will not support a discovery. A valuable mineral deposit must be actually and physically exposed within each mining claim (or group of claims as discussed under the previous section). The mineral may be explored in trenches, cuts, shafts, adits, drill cores, and so forth. Geochemical or geophysical anomalies, unsupported and uncorrelated with physical exposures of mineral cannot be used for discovery (see BLM WO Memorandum No. 85-191, January 4, 1985).

There are a number of cases that involve the above concept. The most compelling recent one seems to be from the Federal court, where the court said in McCall v. Andrus, 628 F 2d 1188 (1980):

> proof of "discovery" requires a showing of an explored mineral deposit on the claim while "mineral in character" may be proved by geological inference coupled with marketability.

Most of the acceptable criteria for actual and physical exposure of a mineral is clear, however, a few words are in order about drill cores and/or cuttings. The following conditions may allow drill core and/or cuttings to be acceptable for discovery.

1. Drilling is done by a reputable party or company in which the claimant has no financial or other interest.

2. Adequate and proper logs are taken and maintained.

3. Cores or cuttings are left in proper order, clearly marked for proper identification as to drill hole number, depth, location, and so forth.

4. Cores, cuttings and logs are made available to the government mineral examiner for his inspection.

5. Assay intervals (or chemical or mineral analyses), and certificates of results from a reputable assayer, chemist, or mineralogist are made available to the government mineral examiner.

6. The examiner be allowed to spot check certain intervals of case or cuttings for accuracy of grade.

MINERAL IN CHARACTER, THE 10 ACRE RULE, AND PLACER CLAIMS

General

One discovery of a valuable mineral deposit per placer claim is sufficient, whether the claim is 20 acres for an individual placer claim, or 160 acres for an association of 8 persons. However, regulations regarding placer claims require that after discovery of a valuable deposit has been made that each 10-acre plot be examined for its mineral in character nature. (43 CFR 3842). Only those 10-acre plots that are mineral

in character can be clear-listed for patent: U.S. v. Meyers, 17 IBLA 313 (1974), U.S. v. Lara, 67 IBLA 48,50 (1982), and McCall v. Andrus, 628 F 2d 1185 (9th cir.) (1980), cert. denied 450 US 996 (1981).

Before we discuss the elements of a mineral in character determination it is critical to know what the term means. We think that the best definition is as follows:

> It is not essential that there be an actual discovery of mineral on the land. It is sufficient to show only that known conditions are such as reasonably to engender the belief that the land contains mineral of such quality and in such quantity as to render its extraction profitable and justify expenditures to that end. Such belief may be predicated upon geological conditions, discoveries of minerals in adjacent land and other observable external conditions upon which prudent and experienced men are shown to be accustomed to act; Southern Pacific Co., 71 ID 233 (1964).

Style

In U.S. v. Lara (On Reconsideration), 80 IBLA 215 (1984) the IBLA said:

> In determining whether each 10-acre part of a placer claim is mineral in character, the claim must be subdivided to create square 10-acre parcels, to the extent possible, regardless whether the claim, as laid out on the ground, conforms to the system of public land surveys. At 80 IBLA 216 (1984).

Geologic Inference

Mineral in character can be determined through geologic inference (which engenders the belief). Much has been written about geologic inference, but we feel the following section from U.S. v. Lundy, A-306724 (June 30, 1967) covers the essential ingredients:

> First, we fail to recognize the distinction the appellant places upon "geological inference" and upon "opinion of experts" who are geologists. To infer suggests the arriving at an opinion by reasoning from known facts or evidence. Thus, it would seem that geological inference is no more than opinion of a geologist inferred or deduced from known and observed geological evidence.

Geologic inference is acceptable for mineral in character determination on each 10-acre plot within any placer claim, but inference must be from a data base and not merely an unsubstantiated opinion. Moreover, the geologic inference must show that mineral (gold) must occur in amounts that can be mined at a profit. Thus mineral in character is essentially discovery through geologic inference.

SOME FEDERAL REGULATIONS

General

To aid the interested reader part of the regulations in Title 43 of the Federal Code of Regulations (CFR) are made part of this report. The regulations at Part 3830 through 3870 as of October 1, 1984 are given below.

Regulations at 43 CFR 3830 through 3870

PART 3830—LOCATION OF MINING CLAIMS

Subpart 3831—Rights to Mineral Lands

Sec.
3831.1 Manner of initiating rights under locations.

Subpart 3832—Who May Make Locations

3832.1 Qualifications.

Subpart 3833—Recordation of Mining Claims and Filing Proof of Annual Assessment Work or Notice of Intention to Hold Mining Claims, Mill or Tunnel Sites

3833.0-1 Purpose.
3833.0-2 Objectives.
3833.0-3 Authority.
3833.0-5 Definitions.
3833.1 Recordation of mining claims.
3833.1-1 Recordation of mining claims and mill sites located on or before October 21, 1976.
3833.1-2 Recordation of mining claims, mill sites and tunnel sites located after October 21, 1976.
3833.1-3 Recordation fee.
3833.2 Evidence of assessment work-notice of intention to hold a claim or site.
3833.2-1 When filing is required.
3833.2-2 Contents for evidence of assessment work.
3833.2-3 Contents for notice of intention to hold claim or site.
3833.2-4 When evidence or notice is not required.
3833.3 Notice of transfer of interest.
3833.4 Failure to file.
3833.5 Effect of recording and filing.

Subpart 3831—Rights to Mineral Lands

§ 3831.1 Manner of initiating rights under locations.

Rights to mineral lands, owned by the United States, are initiated by prospecting for minerals thereon, and, upon the discovery of minerals, by locating the lands upon which such discovery has been made. A location is made by (a) staking the corners of the claim, except placer claims described

by legal subdivision where State law permits locations without marking the boundaries of the claims on the ground, (b) posting notice of location thereon, and (c) complying with the State laws, regarding the recording of the location in the county recorder's office, discovery work, etc. As supplemental to the United States mining laws there are State statutes relative to location, manner of recording of mining claims, etc., in the State, which should also be observed in the location of mining claims. Information as to State laws can be obtained locally or from State officials.

[38 FR 24650, Sept. 10, 1973]

Subpart 3832—Who May Make Locations

§ 3832.1 Qualifications.

Citizens of the United States, or those who have declared their intention to become such, including minors who have reached the age of discretion and corporations organized under the laws of any State, may make mining locations. Agents may make locations for qualified locators.

[35 FR 9750, June 13, 1970]

Subpart 3833—Recordation of Mining Claims and Filing Proof of Annual Assessment Work or Notice of Intention to Hold Mining Claims, Mill or Tunnel Sites

NOTE: The information collection requirements contained in Subpart 3833 have been approved by the Office of Management and Budget under 44 U.S.C. 3507 and assigned clearance number 1004-0114. The information is being collected to meet the requirements of section 314 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1744) to allow the Bureau of Land Management to record mining claims and annual filings (evidence of annual assessment work or notice of intent to hold) properly. This information will be used to verify that the claimant continued to have an interest in the mining claims or sites as provided for in the statute. The obligation to respond is mandatory.

[47 FR 56304, Dec. 15, 1982]

§ 3833.0-1 Purpose.

The purpose of the regulations is to establish procedures for:

(a) The recordation in the proper BLM office of unpatented mining claims, mill sites, or tunnel sites on Federal lands;

(b) The filing in the same office of evidence of performance of annual assessment work or of a notice of intention to hold an unpatented mining claim;

(c) Notifying the proper BLM office of the transfer of an interest in unpatented mining claims, mill sites, or tunnel sites.

(d) These regulations are not intended to supersede or replace existing recording requirements under state law except when specifically changed by the provisions of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701), and are not intended to make the Bureau office the official recording office for all ancillary documents (wills, liens, judgments, etc.) involving an unpatented mining claim, mill site or tunnel site.

[47 FR 56304, Dec. 15, 1982]

§ 3833.0-2 Objectives.

The objectives of these regulations are:

(a) To determine the number and location of unpatented mining claims, mill sites, or tunnel sites located on Federal lands in order to assist in the surface management of those lands and the mineral resources therein;

(b) To remove any cloud on the title to those lands that may exist because they are subject to mining claims that may have been abandoned;

(c) To provide the BLM with information as to the location of active mining claims;

(d) To keep the BLM informed of transfers of interest in unpatented mining claims, mill sites, or tunnel sites.

[47 FR 56304, Dec. 15, 1982]

§ 3833.0-3 Authority.

(a) Section 314 (a) and (b) of the Act (43 U.S.C. 1744) require the recordation of unpatented mining claims, mill sites, and tunnel sites and the filing of

information concerning annual assessment work performed or a notice of intention to hold mining claims in the proper BLM office within specified time periods. Section 314(c) of the Act sets forth the consequences of the failure to file such information or documents within the time limits prescribed.

(b) The Secretary has the general responsibility and authority for the management of Federal lands under 43 U.S.C. 2 and section 310 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1740).

(c) The General Mining Law of May 10, 1872, section 2319 of the Revised Statutes (30 U.S.C. 22) provides that the exploration, location, and purchase of valuable mineral deposits shall be "under regulations prescribed by law," and section 2478 of the Revised Statutes, as amended (43 U.S.C. 1201), provides that those regulations will be issued by the Secretary.

(d) The Act of August 31, 1951 (31 U.S.C. 483a) and section 304(a) of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1734).

[42 FR 5300, Jan. 27, 1977, as amended at 44 FR 9722, Feb. 14, 1979; 47 FR 56304, Dec. 15, 1982]

§ 3833.0-5 Definitions.

As used in this subpart:

(a) "The Act" means the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 *et seq.*).

(b) "Unpatented mining claim" means a lode mining claim or a placer mining claim located and held under the General Mining Law of 1872, as amended (30 U.S.C. 21-54), for which a patent under 30 U.S.C. 29 and 43 CFR Part 3860 has not been issued.

(c) "Mill site" means any land located under 30 U.S.C. 42 for which patent under 30 U.S.C. 42 and 43 CFR Part 3860 has not been issued.

(d) "Tunnel site" means a tunnel located pursuant to 30 U.S.C. 27.

(e) "Owner" means the person who is the holder of the right to sell or transfer all or any part of the unpatented mining claim, mill or tunnel site. The owner shall be identified in the instruments required by these regulations by a notation on those instruments.

(f) "Federal lands" means any lands or interest in lands owned by the United States, except lands within units of the National Park System, which are subject to location under the General Mining Law of 1872, supra, including, but not limited to, those lands within forest reservations in the National Forest System and wildlife refuges in the National Wildlife Refuge System.

(g) "Proper BLM office" means the Bureau of Land Management office listed in § 1821.2-1(d) of this title as having jurisdiction over the area in which the claims or sites are located. Notwithstanding the requirements of § 1821.2-1(d) of this title, filings made under this subpart in Alaska may be filed in either office in that State.

(h) "Date of location" or "located" means the date determined by State law in the local jurisdiction in which the unpatented mining claim, mill or tunnel site is situated.

(i) "Copy of the official record" means a legible reproduction or duplicate, except microfilm, of the instrument which was or will be filed under state law in the local jurisdiction where the claim or site is located. It also includes and exact reproduction, duplicate, except microfilm, of an amended instrument which may change or alter the description of the claim or site.

(j) "Affidavit of assessment work" means the instrument required to be filed under state law for the purpose of evidencing that labor or improvements, valued at not less than $100, have been made upon or for the benefit of the mining claim as required by 30 U.S.C. 28 or, if state law does not require the filing of such an instrument, an affidavit evidencing the performance of such assessment work.

(k) "Notice of intention to hold a mining claim" means an instrument containing the information required in § 3833.2-3 of this title which has been or will be filed under state law in the local jurisdiction indicating that the owner continues to have an interest in the claim.

(l) "Notice of intention to hold a mill or tunnel site" means an instrument containing the information in the form required in § 3833.2-3 of this title

indicating that the owner continues to hold an interest in the site.

(m) "Filed or file" means being received and date stamped by the proper BLM office. For the purpose of complying with § 3833.2-1 of this title, "timely filed" means being filed within the time period prescribed by law, or received by January 19th after the period prescribed by law in an envelope bearing a clearly dated postmark affixed by the United States Postal Service within the period prescribed by law. This 20 day period does not apply to a notice of location filed pursuant to § 3833.1-2 of this title. (See § 1821.2-2(e) of this title where the last day falls on a date the office is closed.)

(n) "Assessment year" is defined in 30 U.S.C. 28 and commences at 12 o'clock noon on September 1st of each year. For the purpose of complying with the requirements of section 314(a) of the Act, the calendar year in which the assessment year ends is the year for which the evidence of annual assessment work shall be filed.

(o) "Filing year" for the purposes of complying with the Act begins on January 1st of each year and continues through December 30th.

[42 FR 5300, Jan. 27, 1977, as amended at 44 FR 9722, Feb. 14, 1979; 47 FR 56304, Dec. 15, 1982; 48 FR 7179, Feb. 18, 1983]

§ 3833.1 Recordation of mining claims.

[42 FR 5300, Jan. 27, 1977]

§ 3833.1-1 Recordation of mining claims and mill sites located on or before October 21, 1976.

Mining claims and sites which were located prior to October 21, 1976, the effective date of the Act, but which had not been recorded in the proper BLM office on or before October 22, 1979, as required by the Act, are by law conclusively deemed abandoned and void. There is no statutory provision for accepting a notice or certificate of location for such an abandoned and void claim or site.

[47 FR 56305, Dec. 15, 1982]

§ 3833.1-2 Recordation of mining claims, mill sites and tunnel sites located after October 21, 1976.

(a) The owner of an unpatented mining claim, mill site or tunnel site located after October 21, 1976, on Federal lands, excluding lands within units of the National Park System shall file within 90 days after the date of location of that claim or site in the proper BLM office, a copy of the official record of the notice or certificate of location of that claim or site that was or will be filed under state law. If state law does not require the recordation of a notice or certificate of location of a claim or site, a notice or certificate of location containing the information in paragraph (b) of this section shall be filed.

(b) The copy of the notice or certificates filed in accordance with paragraphs (a) and (b) of this section shall be supplemented by the following additional information unless it is included in the copy:

(1) The name or number of the claim or site, or both, if the claim or site has both;

(2) The name and current mailing address, if known, of the owner or owners of the claim or site;

(3) The type of claim or site;

(4) The date of location;

(5) For all claims or sites a description shall be furnished.

(i) This description shall recite, to the extent possible, the section(s), the approximate location of all or any part of the claim to within a 160 acre quadrant of the section (quarter section), or sections, if more than one is involved, and the township, range, meridian and State obtained from an official survey plat or other U.S. Government map showing either the surveyed or protracted U.S. Government grid, whichever is applicable.

(ii) The location of the claims or sites shall be depicted on either a topographic map published by the U.S. Geological Survey or by a narrative or a sketch describing the claim or site with reference by appropriate tie to some topographic, hydrographic, or man-made feature. Such map, narrative description, or sketch shall set forth the boundaries and position of

the individual claim or site with such accuracy as will permit the authorized officer of the agency administering the lands or mineral interests in such lands to identify and locate the claims or sites on the ground.

(iii) More than one claim or site may be shown on a single map or described in a single narrative or sketch if they are located in the same general area, so long as the individual claims or sites are clearly identified;

(6) In place of the requirements of paragraph (b)(5) of this section, an approved mineral survey may be supplied. A mining claim described by legal subdivisions, section, township, range, meridian and State fulfills the requirements of paragraph (b)(5) of this section.

(7) Nothing in the requirements for a map and description found in this section shall require the owner of a claim or site to employ a professional surveyor or engineer.

[42 FR 5300, Jan 27, 1977, as amended at 44 FR 9722, Feb. 14, 1979; 47 FR 56305, Dec. 15, 1982; 48 FR 7179, Feb. 18, 1983]

§ 3833.1-3 Recordation fee.

Each claim or site filed shall be accompained by a one time nonrefundable recordation fee of $5. A Certificate of Location not accompained by the appropriate recordation fee will be noted as being recorded on the date received if, upon notification by the authorized offficer, the claimant submits the fee within 30 days from the receipt of the certified notification to submit the proper fee. Failue to submit the proper fee shall cause the recordation to be rejected and returned to the owner.

[47 FR 56305, Dec. 15, 1982]

§ 3833.2 Evidence of assessment work-notice of intention to hold a claim or site.

[44 FR 9723, Feb. 14, 1979]

§ 3833.2-1 When filing is required.

(a) The owner of an unpatented mining claim located within the boundary unit of the National Park System shall comply with the requirements of 36 CFR 9.5. Evidence of annual assessment work or notice of intent to hold shall be filed yearly with the proper BLM office as provided for in this subpart. The BLM will forward copies of such annual filings to the proper office of the National Park Service.

(1) Except as provided in paragraph (a)(2) of this section, the owner of an unpatented mining claim, mill site or tunnel site located within any unit of the National Park System shall file before October 22, 1979, and on or before December 30 of each calendar year after the year of recording (See 30 CFR 9.5), a notice of intention to hold the mining claim, mill site or tunnel site. Such notice shall be in the form prescribed by § 3833.2-3 of this title and shall be filed with the proper BLM office.

(2) Where a claimant has received a permit under 36 CFR 9.5 to do assessment work on a claim in a unit of the National Park System, the claimant may file with the Bureau of Land Management in lieu of the notice required by paragraph (a)(1) of this section, evidence of assessment work in the form prescribed in § 3833.2-2 of this title.

(b)(1) The owner of an unpatented mining claim located on Federal lands excluding lands within a unit of the National Park System, established on or before September 28, 1976, shall have filed or caused to have been filed on or before December 30 of each calendar year following the calendar year in which such claim was located, file in the proper BLM office evidence of annual assessment work performed during the previous assessment year or a notice of intention to hold the mining claim.

(2) Evidence of assessment work performed which is filed under these regulations at any time during the interval of January 1 to September 1 shall be deemed to have been filed on or before December 30, of that calendar year; and

(c) The owner of a mill or tunnel site located on Federal lands, excluding lands within a unit of the National Park System established on or before September 28, 1976, but including lands within a national monument administered by the United States Fish and Wildlife Service or the United States Forest Service, shall have filed or caused to have been filed in the proper BLM office on or before December 30 of each year following the year of recording pursuant to § 3833.1-2 of this title, a notice of intention to hold the mill or tunnel site.

(d) Section 314 of the Act (43 U.S.C. 1744) requires that the owner of an unpatented mining claim shall file, prior to December 31st of each year following the calendar year in which the claim was located, either a notice of intent to hold the claim, or evidence of annual assessment work. The General Mining laws (30 U.S.C. 28) allow the required annual assessment work to be initiated in the assessment year following the assessment year in which the claim was located. Therefore, in order to comply with the filing requirements of section 314 of the Act, claimants of mining claims located after 12 o'clock noon on September 1st of that same year, shall file with the proper BLM office, a notice of intent to hold the mining claim in the first calendar year following its location. This does not apply to the claimant who elects to perform his assessment work early and wishes to record the assessment work.

[44 FR 9723, Feb. 14, 1979, as amended at 44 FR 20430, Apr. 5, 1979; 47 FR 56305, Dec. 15, 1982; 48 FR 7179, Feb. 18, 1983]

§ 3833.2-2 Contents for evidence of assessment work.

Evidence of annual assessment work shall be in the form of either;

(a) An exact legible reproduction or duplicate, except microfilm of the evidence of assessment work which was performed under state law and was or will be filed for record pursuant to section 314(a) of the Act in the local jurisdiction of the state where the claim or group of claims is located and recorded setting forth the additional information:

(1) The Bureau of Land Management serial number assigned to each claim upon filing of the notice, certificate of location in the proper BLM office. Filing the serial number shall comply with the requirement in the act to file an additional description of the claim.

(2) Any change in the mailing address, if known, of the owner or owners of the claim or claims; or

(b) An exact legible reproduction or duplicate, except microfilm, of the detailed report concerning geological, geochemical and geophysical surveys provided for by the Act of September 2, 1958 (30 U.S.C. 28-1) which has been or will be filed for record pursuant to section 314(a)(1) of the Act in the local jurisdiction of the State where the claim or group of claims is located and recorded setting forth the following additional information:

(1) The Bureau of Land Management serial number assigned to each claim upon filing in the proper BLM office of a copy of the official record of the notice or certificate of location or patent application; and

(2) Any change in the mailing address, if known, of the owner or owners of the claim.

[42 FR 5300, Jan. 27, 1977, as amended at 44 FR 9723, Feb. 14, 1979; 47 FR 56306, Dec. 15, 1982]

§ 3833.2-3 Contents for a notice of intention to hold claim or site.

(a) A notice of intention to hold a mining claim or group of mining claims may be filed at the election of the owner, regardless of whether the assessment has been suspended, deferred or not yet accrued. However, the claimant shall file with the Bureau of Land Management the same documents which have been or will be recorded with the county or local office of recordation. A notice of intention to hold a mining claim shall be effective only to satisfy the filing requirement for the year (as specified in § 3833.0-5 of this title), in which the notice is filed. The filing of a notice with the Bureau of Land Management shall not relieve the owner of complying with Federal and state laws pertaining to the performance of annual assessment work.

(b) A notice of intention to hold a mining claim or group of mining claims shall be in the form of either:

(1) An exact legible reproduction or duplicate, except microfilm, of an instrument, signed by the owner of the claim of his/her agent, which was or

will be filed for record pursuant to section 314(a)(1) of the Act in the local jurisdiction of the State where the claim is located and recorded setting forth the following information:

(i) The Bureau of Land Management serial number assigned to each claim upon filing in the proper BLM office of a copy of the notice or certificate of location. Citing the serial number shall comply with the requirement in the Act to file an additional description of the claim;

(ii) Any change in the mailing address, if known, of the owner or owners of the claim;

(2) A reference to the decision on file in the proper BLM office by date and serial number which granted a deferment of the annual assessment work.

(3) A reference to a pending petition for deferment of the annual assessment work required by 30 U.S.C. 28 by date of filing and serial number and with the proper BLM office.

(c) A notice of intention to hold a mill or tunnel site or group of mill or tunnel sites shall be in the form of a letter or other notice signed by the owner(s) of such sites or their agent(s) setting forth the following information:

(1) The Bureau of Land Management serial number assigned to each site upon filing in the proper BLM office of a copy of the official record of the notice or certification of location;

(2) Any change in the mailing address, if known, of the owner(s) of the site(s).

[47 FR 56306, Dec. 15, 1982; 48 FR 7179, Feb. 18, 1983]

§ 3833.2–4 When evidence or notice is not required.

Evidence of annual assessment work performed or a notice of intention to hold a mining claim need not be filed on unpatented mining claims or mill sites for which application for mineral patent which complies with 43 CFR Part 3860 has been filed and final certificate has been issued. (See 43 CFR 3851.5). The filing of an application and issuance of the final certificate will be deemed full compliance with the requirements of section 314(a) of the Act and the owner of that claim or site shall be exempt from the filing requirements of § 3833.2–1.

[42 FR 5300, Jan. 27, 1977, as amended at 47 FR 56307, Dec. 15, 1982]

§ 3833.3 Notice of transfer of interest.

(a) Whenever the owner of an unpatented mining claim, mill site or tunnel site, which has been recorded in accordance with § 3833.1–2, sells, assigns, or otherwise conveys all or any part of his interest in the claim, his transferee shall file in the proper BLM office within 60 days after the completion of the transfer the following information:

(1) The serial number assigned to the claim by the authorized officer upon filing of a copy of the official record of the notice or certificate of location in the proper BLM office: and

(2) The name and mailing address of the person(s) to whom an interest in the claim has been sold, assigned, or otherwise transferred.

(b) Whenever any person acquires an interest through inheritance in an unpatented mining claim, mill site, or tunnel site recorded in accordance with § 3833.1, he shall file in the proper BLM office within 60 days after completion of the transfer the information required by paragraph (a) of this section.

[42 FR 5300, Jan. 27, 1977]

§ 3833.4 Failure to file.

(a) The failure to file an instrument required by §§ 3833.1–2 (a), and 3833.2–1 of this title within the time periods prescribed therein, shall be deemed conclusively to constitute an abandonment of the mining claim, mill or tunnel site and it shall be void.

(b) The failure to file the information required in §§ 3833.1–2(b), 3833.2–1(c), 3833.2–2 (a) and (b) or 3833.2–3 (b) and (c) shall not be deemed conclusively to constitute an abandonment of the claim or site, but such information shall be filed within 30 days of receipt of a decision from the authorized officer calling for such information. Failure to file such information within the time allowed by decision shall cause the filing to be rejected by a decision appealable under the procedures of Part 4 of this title. Final affirmance of such rejection for failure to file such information shall be deemed conclusive evidence of abandonment of the mining claim, mill or tunnel site and such mining claim, mill or tunnel site shall be void.

(c) The fact that an instrument is filed in accordance with other laws permitting filing for record thereof and is defective or not timely filed for record under those laws shall not be considered failure to file under this subpart. The fact that an instrument is filed for record under this subpart by or on behalf of some, but not all of the owners of the mining claim, mill or tunnel site shall not affect the validity of this filing.

(d) Any mining claim deemed abandoned under section 314(c) of the Act for failure to file an instrument in the local jurisdiction of the State where the claim is located pursuant to section 314 (a)(1) and (b) of the Act, shall not be validated by filing the instrument with the BLM in accordance with § 3833.2–1 of this title, and such instrument is ineffective even though the claim may currently be shown to exist in the BLM records.

(e) Title IV of the Federal Oil and Gas Royalty Management Act of 1982 (30 U.S.C. 188(f)) provides that where an unpatented oil placer mining claim validly located prior to February 24, 1920, which has been or is currently producing or is capable of producing oil or gas, has been or is hereafter deemed conclusively abandoned for failure to file timely the required instruments or copies of instruments required by section 314 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1744), and it is shown to the satisfaction of the authorized officer that such failure was inadvertent, justifiable, or not due to lack of reasonable diligence on the part of the owner, the authorized officer may issue, for the lands covered by the abandoned unpatented oil placer mining claim, a noncompetitive oil and gas lease consistent with the provisions of section 17(e) of the Mineral Leasing Act (30 U.S.C. 226(e)) to be effective from the statutory date the claim was conclusively abandoned. The conditions and requirements for issuance of such leases are contained in § 3108.2–4 of this title.

[44 FR 9723, Feb. 14, 1979, as amended at 47 FR 56307, Dec. 15, 1982; 48 FR 7179, Feb. 18, 1983; 49 FR 30450, July 30, 1984]

§ 3833.5 Effect of recording and filing.

(a) Recordation or application involving an unpatented mining claim, mill site, or tunnel site by itself shall not render valid any claim which would not be otherwise valid under applicable law and does not give the owner any rights he is not otherwise entitled to by law.

(b) Nothing in this subpart shall be construed as a waiver of the assessment work requirements. (30 U.S.C. 28) Compliance with the requirements of this subpart shall be in addition to and not a substitute for compliance with the requirements of section 2324 of the Revised Statutes and with laws and regulations issued by any State or other authority relating to performance of annual assessment work.

(c) Filing of instruments pertaining to mining claims under other Federal law with the BLM or other Federal agency shall not excuse the filings required by this subpart and filings under this subpart shall not excuse the filing of instruments pertaining to mining claims under any other Federal law, except that filing a notice or certificate of location or an affidavit of annual assessment work under this subpart which is marked by the owner as also being filed under the Act of April 8, 1948 (62 Stat. 162) or the Act of August 11, 1955 (30 U.S.C. 621–625), will satisfy the recording requirement for O & C lands under 43 CFR Subpart 3821 and Pub. L. 359 lands under 43 CFR Part 3730, or as provided in § 3833.2–1(b) of this title.

(d) In the case of any action or contest initiated by the United States affecting an unpatented mining claim, mill or tunnel site, only those owners who have recorded their claim or site pursuant to § 3833.1–2 of this title and filed a notice of transfer of interest pursuant to § 3833.3 of this title or owners whose names show on annual filings shall be considered by the United States as parties whose rights are affected by such action or contest

and shall be personally notified and served by certified mail sent to their last address of record. All methods reasonably calculated to ensure that those parties receive actual notice of the action or contest shall be employed. If those methods are not successful, the interested parties shall be notified by publication in accordance with 43 CFR 4.450. Owners who have not recorded a claim or site or filed a notice of transfer shall not be personally served and will be bound by any contest proceeding even though they have not been personally served. This subpart shall not apply to procedures for public notice listed at Subpart 3860 of this title with respect to mineral patents.

(e) Actual notice of an unpatented mining claim or mill or tunnel site by any employee or officer of the United States shall not exempt the claim or site from the requirements of this subpart.

(f) Failure of the government to notify an owner upon his filing or recording of a claim or site under this subpart that such claim or site is located on lands not subject to location or otherwise void for failure to comply with Federal or State law or regulations shall not prevent the government from later challenging the validity of or declaring void such claim or site in accordance with due process of law.

(g) Any person who files an instrument required by these regulations knowing the same to contain any false, fictitious or fraudulent statement or entry, may be subject to criminal penalties under 18 U.S.C. 1001.

[42 FR 5200, Jan. 27, 1977, as amended at 44 FR 9723, Feb. 14, 1979; 47 FR 56307, Dec. 15, 1982]

PART 3840—NATURE AND CLASSES OF MINING CLAIMS

Subpart 3840—Types of Claims

Sec.
3840.1 Classes of mining claims.

Subpart 3841—Lode Claims

3841.1 Lodes located previous to May 10, 1872.
3841.2 Lodes must not have been adversely claimed.
3841.3 Discovery.
3841.3-1 Discovery required before location.
3841.3-2 Discovery work.
3841.4 Describing locations.
3841.4-1 Length of lode claims.
3841.4-2 Width of lode claims.
3841.4-3 Extent of surface ground.
3841.4-4 Defining of locations.
3841.4-5 Location notice; monumenting.
3841.4-6 Recording of location notice.

Subpart 3842—Placer Claims

3842.1 Placer claims; general.
3842.1-1 Discovery.
3842.1-2 Maximum allowable acreage.
3842.1-3 Locations authorized in 10-acre units.
3842.1-4 Manner of describing 10-acre units.
3842.1-5 Conformity of placer claims to the public land surveys.
3842.2 Building-stone placers.
3842.3 Saline placers.
3842.4 Petroleum placers.

Subpart 3843—Tunnel Sites

3843.1 Possessory right of tunnel proprietor.
3843.2 Location of tunnel claims.
3843.3 Recording of notices.

Subpart 3844—Millsites

3844.0-3 Authority.
3844.1 Required use.

Subpart 3840—Types of Claims

§ 3840.1 Classes of mining claims.

Mining claims are of two distinct classes: lode claims and placers.

[35 FR 9750, June 13, 1970]

Subpart 3841—Lode Claims

SOURCE: 35 FR 9750, June 13, 1970, unless otherwise noted.

§ 3841.1 Lodes located previous to May 10, 1872.

The status of lode claims located or patented previous to May 10, 1872, is not changed with regard to their extent along the lode or width of surface; but the claim is enlarged by 2322 and 2328, R.S. (30 U.S.C. 26, 33), by investing the locator, his heirs or assigns, with the right to follow, upon the conditions stated therein, all veins, lodes, or ledges, the top or apex of which lies inside of the surface lines of his claim.

33-151 O-85--51

§ 3841.2 Lodes must not have been adversely claimed.

It is to be distinctly understood that the law limits the possessory right to veins, lodes, or ledges, other than the one named in the original location, to such as were not adversely claimed on May 10, 1872, and that where such other vein or ledge was so adversely claimed at that date the right of the party so adversely claiming is in no way impaired by the act of that date.

§ 3841.3 Discovery.

§ 3841.3-1 Discovery required before location.

No lode claim shall be located until after the discovery of a vein or lode within the limits of the claim, the object of which provision is evidently to prevent the appropriation of presumed mineral ground for speculative purposes, to the exclusion of bona fide prospectors, before sufficient work has been done to determine whether a vein or lode really exists.

§ 3841.3-2 Discovery work.

The claimant should, therefore, prior to locating his claim, unless the vein can be traced upon the surface, sink a shaft or run a tunnel or drift to a sufficient depth therein to discover and develop a mineral-bearing vein, lode, or crevice; should determine, if possible, the general course of such vein in either direction from the point of discovery, by which direction he will be governed in marking the boundaries of his claim on the surface.

§ 3841.4 Describing locations.

§ 3841.4-1 Length of lode claims.

From and after May 10, 1872, any person who is a citizen of the United States, or who has declared his intention to become a citizen, may locate, record, and hold a mining claim of 1,500 linear feet along the course of any mineral vein or lode subject to location; or an association of persons, severally qualified as above, may make joint location of such claim of 1,500 feet, but in no event can a location of a vein or lode made after May 10, 1872, exceed 1,500 feet along the course thereof, whatever may be the number of persons composing the association.

§ 3841.4-2 Width of lode claims.

No lode located after May 10, 1872, can exceed a parallelogram 1,500 feet in length by 600 feet in width, but whether surface ground of that width can be taken depends upon the local regulations or State or Territorial laws in force in the several mining districts. No such local regulations or State or Territorial laws shall limit a vein or lode claim to less than 1,500 feet along the course thereof, whether the location is made by one or more persons, nor can surface rights be limited to less than 50 feet in width unless adverse claims existing on May 10, 1872, render such lateral limitation necessary.

§ 3841.4-3 Extent of surface ground.

With regard to the extent of surface ground adjoining a vein or lode, and claimed for the convenient working thereof, the Act of May 10, 1872, provides that the lateral extent of locations of veins or lodes made after said date shall in no case exceed 300 feet on each side of the middle of the vein at the surface, and that no such surface rights shall be limited by any mining regulations to less than 25 feet on each side of the middle of the vein at the surface, except where adverse rights existing on May 10, 1872, may render such limitation necessary; the end lines of such claims to be in all cases parallel to each other. Said lateral measurements cannot extend beyond 300 feet on either side of the middle of the vein at the surface, or such distance as is allowed by local laws. For example: 400 feet cannot be taken on one side and 200 feet on the other. If, however, 300 feet on each side are allowed, and by reason of prior claims but 100 feet can be taken on one side, the locator will not be restricted to less than 300 feet on the other side; and when the locator does not determine by exploration where

the middle of the vein at the surface is, his discovery shaft must be assumed to mark such point.

§ 3841.4-4 Defining of locations.

Section 5 of the Act of May 10, 1872, now section 2324, Revised Statutes (30 U.S.C. 28), requires that "the location must be distinctly marked on the ground so that its boundaries can be readily traced." Locators can not exercise too much care in defining their locations at the outset, inasmuch as section 5 of the Act of May 10, 1872 (17 Stat. 92; 30 U.S.C. 28) requires that all records of mining locations made subsequent to the date of said Act shall contain the name or names of the locators, the date of the location, and such a description of the claim or claims located, by reference to some natural object or permanent monument, as will identify the claim.

§ 3841.4-5 Location notice; monumenting.

(a) The location notice should give the course and distance as nearly as practicable from the discovery shaft on the claim to some permanent, wellknown points or objects, such, for instance, as stone monuments, blazed trees, the confluence of streams, point of intersection of well-known gulches, ravines, or roads, prominent buttes, hills, etc., which may be in the immediate vicinity, and which will serve to perpetuate and fix the locus of the claim and render it susceptible of identification from the description thereof given in the record of locations in the district, and should be duly recorded.

(b) In addition to the foregoing data, the claimant should state the names of adjoining claims, or, if none adjoin, the relative positions of the nearest claims; should drive a post or erect a monument of stones at each corner of his surface ground, and at the point of discovery or discovery shaft should fix a post, stake, or board, upon which should be designated the name of the lode, the name or names of the locators, the number of feet claimed, and in which direction from the point of discovery, it being essential that the location notice filed for record, in addition to the foregoing description, should state whether the entire claim of 1,500 feet is taken on one side of the point of discovery, or whether it is partly upon one and partly upon the other side thereof, and in the latter case, how many feet are claimed upon each side of such discovery point. As to the importance of monuments, and as to their paramount authority, see the Act of April 28, 1904 (33 Stat. 545; 30 U.S.C. 34), which amended R.S. 2327.

§ 3841.4-6 Recording of location notice.

The location notice must be filed for record in all respects as required by the State or territorial laws, and local rules and regulations, if there by any.

Subpart 3842—Placer Claims

SOURCE: 35 FR 9751, June 13, 1970, unless otherwise noted.

§ 3842.1 Placer claims; general.

§ 3842.1-1 Discovery.

But one discovery of mineral is required to support a placer location, whether it be of 20 acres by an individual, or of 160 acres or less by an association of persons.

§ 3842.1-2 Maximum allowable acreage.

(a) By R.S. 2330 (30 U.S.C. 36), it is declared that no location of a placer claim made after July 9, 1870, shall exceed 160 acres for any one person or association of persons, which location shall conform to the United States surveys.

(b) R.S. 2331 (30 U.S.C. 35) provides that all placer-mining claims located after May 10, 1872, shall conform as nearly as practicable with the United States system of public land surveys and the rectangular subdivisions of such surveys, and such locations shall not include more than 20 acres for each individual claimant.

(c) The foregoing provisions of law are construed to mean that after July 9, 1870, no location of a placer claim can be made to exceed 160 acres, whatever may be the number of locators associated together, or whatever the local regulations of the district may allow; and that from and after May 10, 1872, no location can exceed 20 acres for each individual participating

therein; that it, a location by two persons can not exceed 40 acres, and one by three persons can not exceed 60 acres.

§ 3842.1-3 Locations authorized in 10-acre units.

By R.S. 2330 (30 U.S.C. 36), authority is given for subdividing 40-acre legal subdivisions into 10-acre tracts. These 10-acre tracts should be considered and dealt with as legal subdivisions, and an applicant having a placer claim which conforms to one or more of such 10-acre tracts, contiguous in case of two or more tracts, may make entry thereof, after the usual proceedings, without further survey or plat.

§ 3842.1-4 Manner of describing 10-acre units.

A 10-acre subdivision may be described, for instance if situated in the extreme northeast of the section, as the "NE. ¼ of the NE. ¼ of the NE. ¼" of the section, or, in like manner, by appropriate terms, wherever situated; but in addition to this description, the notice must give all the other data required in a mineral application, by which parties may be put on inquiry as to the land sought to be patented. The proofs submitted with applications must show clearly the character and extent of the improvements upon the premises.

§ 3842.1-5 Conformity of placer claims to the public land surveys.

(a) All placer-mining claims located after May 10, 1872, shall conform as near as practicable with the United States system of public-land surveys and the rectangular subdivisions of such surveys, whether the locations are upon surveyed or unsurveyed lands.

(b) Conformity to the public-land surveys and the rectangular subdivisions thereof will not be required where compliance with such requirement would necessitate the placing of the lines thereof upon other prior located claims or where the claim is surrounded by prior locations.

(c) Where a placer location by one or two persons can be entirely included within a square 40-acre tract, by three or four persons within two square 40-acre tracts placed end to end, by five or six persons within three square 40-acre tracts, and by seven or eight persons within four square 40-acre tracts, such locations will be regarded as within the requirements where strict conformity is impracticable.

(d) Whether a placer location conforms reasonably with the legal subdivisions of the public survey is a question of fact to be determined in each case, and no location will be passed to patent without satisfactory evidence in this regard. Claimants should bear in mind that it is the policy of the Government to have all entries whether of agricultural or mineral lands as compact and regular in form as reasonably practicable, and that it will not permit or sanction entries or locations which cut the public domain into long narrow strips or grossly irregular or fantastically shaped tracts. (Snow Flake Fraction Placer, 37 L.D. 250.)

§ 3842.2 Building-stone placers.

The Act of August 4, 1892 (27 Stat. 348; 30 U.S.C. 161), extends the mineral land laws so as to bring lands chiefly valuable for building stone within the provisions of said laws.

(a) Common varieties of building stone are, since the Act of July 23, 1955 (69 Stat. 367; 30 U.S.C. 611) no longer locatable under the mining laws.

(b) Uncommon varieties of building stone continue to be subject to the building stone placer supplement to the mining law, 30 U.S.C. 161.

§ 3842.3 Saline placers.

(a) Under the Act approved January 31, 1901 (31 Stat. 745; 30 U.S.C. 162), extending the mining laws to saline lands, the provisions of the law relating to placer-mining claims are extended to all States so as to permit the location and purchase thereunder of all unoccupied public lands containing salt springs, or deposits of salt in any form, and chiefly valuable therefor, with the proviso, "That the same person shall not locate or enter more than one claim hereunder." The saline placer act was superseded by the Mineral Leasing Act of February 25, 1920 (41 Stat. 437; 30 U.S.C. 181 et seq.),

whereby saline (sodium) deposits were made subject to disposal by leases instead of mining locations.

(b) Rights obtained by location under the placer-mining laws are assignable, and the assignee may make the entry in his own name; so, under this act a person holding as assignee may make entry in his own name: *Provided*, That he has not held under this act, at any time, either as locator or entryman, any other lands; his right is exhausted by having held under this act any particular tract, either as locator or entryman, either as an individual or as a member of an association. It follows, therefore, that no application for patent or entry, made under this act, shall embrace more than one single location.

(c) In order that the conditions imposed by the proviso, as set forth in paragraph (b) of this section, may duly appear, the application for patent must contain or be accompanied by a specific statement by each person whose name appears therein that he never has, either as an individual or as a member of an association, located or entered any other lands under the provisions of this act. The application for patent should also be accompanied by a showing, fully disclosing the qualifications as defined by the proviso, of the applicants' predecessors in interest.

§ 3842.4 Petroleum placers.

The Act of February 11, 1897 (29 Stat. 526), provides for the location and entry of public lands chiefly valuable for petroleum or other mineral oils, and entries of that nature made prior to the passage of said act are to be considered as though made thereunder. This Act was superseded by the Mineral Leasing Act of February 25, 1920 (41 Stat. 437).

Subpart 3843—Tunnel Sites

SOURCE: 35 FR 9752, June 13, 1970, unless otherwise noted.

§ 3843.1 Possessory right of tunnel proprietor.

The effect of R.S. 2323 (30 U.S.C. 27), is to give the proprietors of a mining tunnel run in good faith the possessory right to 1,500 feet of any blind lodes cut, discovered, or intersected by such tunnel, which were not previously known to exist within 3,000 feet from the face or point of commencement of such tunnel, and to prohibit other parties, after the commencement of the tunnel, from prospecting for and making locations of lodes on the line thereof and within said distance of 3,000 feet, unless such lodes appear upon the surface or were previously known to exist. The term "face," as used in said sections, is contrued and held to mean the first working face formed in the tunnel, and to signify the point at which the tunnel actually enters cover; it being from this point that the 3,000 feet are to be counted upon which prospecting is prohibited as aforesaid. R.S. 2323 provides: "Failure to prosecute the work on the tunnel for six months shall be considered as an abandonment of the right to all undiscovered veins on the line of such tunnel."

§ 3843.2 Location of tunnel claims.

To avail themselves of the benefits of this provision of law, the proprietors of a mining tunnel will be required, at the time they enter cover as aforesaid, to give proper notice of their tunnel location by erecting a substantial post, board, or monument at the face or point of commencement thereof, upon which should be posted a good and sufficient notice, giving the names of the parties or company claiming the tunnel right; the actual or proposed course or direction of the tunnel, the height and width thereof, and the course and distance from such face or point of commencement to some permanent well-known objects in the vicinity by which to fix and determine the locus in manner heretofore set forth applicable to locations of veins or lodes, and at the time of posting such notice they shall, in order that miners or prospectors may be enabled to determine whether or not they are within the lines of the tunnel, establish the boundary lines thereof, by stakes or monuments placed along such lines at proper intervals, to the terminus of the 3,000 feet from the face or point of commencement of the tunnel, and the lines so marked will define and govern as to specific boundaries within which prospecting for lodes not previously known to exist is prohibited while work on the tunnel is being prosecuted with reasonable diligence.

§ 3843.3 Recording of notices.

A full and correct copy of such notice of location defining the tunnel claim must be filed for record with the mining recorder of the district, to which notice must be attached the sworn statement or declaration of the owners, claimants, or projectors of such tunnel, setting forth the facts in the case; stating the amount expended by themselves and their predecessors in interest in prosecuting work thereon; the extent of the work performed, and that it is bona fide their intention to prosecute work on the tunnel so located and described with reasonable diligence for the development of a vein or lode, or for the discovery of mines, or both, as the case may be. This notice of location must be duly recorded, and, with the said sworn statement attached, kept on the recorder's files for future reference.

Subpart 3844—Millsites

§ 3844.0-3 Authority.

The location and patenting of lands for millsite purposes is authorized by R.S. 2337 as amended by the Act of March 18, 1960. The Act, 30 U.S.C. 42, reads as follows:

Patents for nonmineral lands.

(a) Where nonmineral land not contiguous to the vein or lode is used or occupied by the proprietor of such vein or lode for mining or milling purposes, such nonadjacent surface ground may be embraced, and included in an application for a patent for such vein or lode, and the same may be patented therewith, subject to the same preliminary requirements as to survey and notice as are applicable to veins or lodes; but no location made of such nonadjacent land shall exceed five acres, and payment for the same must be made at the same rate as fixed by sections 21-24, 26-28, 29, 30, 33-48, 50-52, and 71-76 of this title for the superficies of the lode. The owner of a quartz mill or reduction works, not owning a mine in connection therewith, may also receive a patent for his mill site, as provided in this section.

(b) Where nonmineral land is needed by the proprietor of a placer claim for mining, milling, processing, beneficiation, or other operations in connection with such claim, and is used or occupied by the proprietor for such purposes, such land may be included in an application for a patent for such claim, and may be patented therewith subject to the same requirements as to survey and notice as are applicable to placers. No location made of such nonmineral land shall exceed five acres and payment for the same shall be made at the rate applicable to placer claims which do not include a vein or lode. (As amended Mar. 18, 1960, Pub. Law 86-390, 74 Stat. 7.)

[35 FR 9752, June 13, 1970]

§ 3844.1 Required use.

A millsite is required to be used or occupied distinctly and explicitly for mining or milling purposes in connection with the lode or placer claim with which it is associated. A custom or independent millsite may be located for the erection and maintenance of a quartz mill or reduction works.

[35 FR 9752, June 13, 1970]

PART 3850—ASSESSMENT WORK

Subpart 3851—Assessment Work; General

Sec.

3851.1 Assessment work.
3851.1-1 Expenditures.
3851.2 Inclusion of surveys in assessment work.
3851.3 Effect of failure to perform assessment work.
3851.4 Failure of a co-owner to contribute to annual assessment work.
3851.5 Assessment work not required after patent certificate.

Subpart 3852—Deferment of Assessment Work

3852.0-3 Authority.
3852.1 Conditions under which deferment may be granted.
3852.2 Filing of petition for deferment, contents.
3852.3 Notice of action on petition to be recorded.
3852.4 Period for which deferment may be granted.
3852.5 When deferred assessment work is to be done.

Subpart 3851—Assessment Work; General

SOURCE: 35 FR 9753, June 13, 1970, unless otherwise noted.

§ 3851.1 Assessment work.

In order to hold the possessory right to a lode or placer location made after May 10, 1872, not less than $100 worth of labor must be performed or improvements made thereon annually. The period within which the work required to be done shall commence at 12 o'clock meridian on the 1st day of September succeeding the date of location of each claim. Where a number of contiguous claims are held in common, the aggregate expenditure that would be necessary to hold all the claims may be made on any one claim. Cornering locations are held not to be contiguous.

§ 3851.1–1 Expenditures.

The annual expenditure in the amount of $100, required by section R.S. 2324 (30 U.S.C. 28), must be made upon placer as well as lode locations.

§ 3851.2 Inclusion of surveys in assessment work.

(a) In addition to the several types of work that may fulfill the annual labor requirement, the requirement can also be satisfied by conducting geological, geochemical, and geophysical surveys. Pub. L. 85-876, Act of September 2, 1958 (72 Stat. 1701; 30 U.S.C. 28-1-2). Such surveys must be conducted by qualified experts and verified by a detailed report filed in the county or recording district office in which the claim is located. This report must set forth fully the following:

(1) The location of the work performed in relation to the point of discovery and boundaries of the claim.

(2) Nature, extent and cost of the work performed.

(3) The basic findings of the surveys.

(4) The name, address and professional background of the person or persons conducting the work.

Such surveys may not be applied as labor for more than two consecutive years or for more than a total of five years on any one mining claim. Each survey shall be nonrepetitive of any previous survey of the same claim. Such surveys will not apply toward the statutory provision requiring the expenditure of $500 for each claim for mineral patent.

(b) As used in this section—

(1) The term "geological surveys" means surveys on the ground for mineral deposits by the proper application of the principles and techniques of the science of geology as they relate to the search for and discovery of mineral deposits;

(2) The term "geochemical surveys" means surveys on the ground for mineral deposits by the proper application of the principles and techniques of the science of chemistry as they relate to the search for and discovery of mineral deposits;

(3) The term "geophysical surveys" means surveys on the ground for mineral deposits through the employment of generally recognized equipment and methods for measuring physical difference between rock types or discontinuities in geological formations;

(4) The term "qualified expert" means an individual qualified by education or experience to conduct geological, geochemical, or geophysical surveys, as the case may be.

§ 3851.3 Effect of failure to perform assessment work.

(a) Failure of a mining claimant to comply substantially with the requirement of an annual expenditure of $100 in labor or improvements on a claim imposed by section 2324 of the Revised Statutes (30 U.S.C. 28) will render the claim subject to cancellation.

(b) Failure to make the expenditure or perform the labor required upon a location will subject a claim to relocation unless the original locator, his heirs, assigns, or legal representatives have resumed work after such failure and before relocation.

[37 FR 17836, Sept. 1, 1972]

§ 3851.4 Failure of a co-owner to contribute to annual assessment work.

Upon the failure of any one of several co-owners to contribute his proportion of the required expenditures, the co-owners, who have performed the

labor or made the improvements as required, may, at the expiration of the year, give such delinquent co-owner personal notice in writing, or notice by publication in the newspaper published nearest the claim for at least once a week for 90 days; and if upon the expiration of 90 days after such notice in writing, or upon the expiration of 180 days after the first newspaper publication of notice, the delinquent co-owner shall have failed to contribute his proportion to meet such expenditures or improvements, his interest in the claim by law passes to his co-owners who have made the expenditures or improvements as aforesaid. Where a claimant alleges ownership of a forfeited interest under the foregoing provision, the statement of the publisher as to the facts of publication, giving dates, and a printed copy of the notice published, should be furnished, and the claimant must state that the delinquent co-owner failed to contribute his proper proportion within the period fixed by the statute.

[35 FR 9753, June 13, 1970. Redesignated at 37 FR 17836, Sept. 1, 1972]

§ 3851.5 Assessment work not required after patent certificate.

Annual expenditure is not required subsequent to entry, the date of issuing the patent certificate being the date contemplated by statute.

[35 FR 9753, June 13, 1970. Redesignated at 37 FR 17836, Sept. 1, 1972]

Subpart 3852—Deferment of Assessment Work

SOURCE: 35 FR 9753, June 13, 1970, unless otherwise noted.

§ 3852.0–3 Authority.

The Act of June 21, 1949 (63 Stat. 214; 30 U.S.C. 28b–c), provides for the temporary deferment in certain unavoidable contingencies of the performance of annual assessment work on mining claims held by location in the United States. The relief under this act is in addition to any other relief available under any other act of Congress with respect to the suspension of annual assessment work on mining claims.

§ 3852.1 Conditions under which deferment may be granted.

The deferment may be granted where any mining claim or group of claims in the United States is surrounded by lands over which a right-of-way for the performance of assessment work has been denied or is in litigation or is in the process of acquisition under State law or where other legal impediments exist which affect the right of the claimant to enter upon the surface of such claim or group of claims or to gain access to the boundaries thereof.

§ 3852.2 Filing of petition for deferment, contents.

(a) In order to obtain temporary deferment, the claimant must file with the authorized officer of the proper office, a petition in duplicate requesting such deferment. No particular form of petition is required, but the applicant must attach to one copy thereof a copy of the notice to the public required by the act which shows that it has been filed or recorded in the office in which the notices or certificates of location were filed or recorded. The petition and duplicate should be signed by at least one of the owners of each of the locations involved, shall give the names of the claims, dates of location, and the date of the beginning of the one-year period for which deferment is requested. Each petition shall be accompanied by a $10 nonrefundable service charge.

(b) If the petition is based upon the denial of a right-of-way, it must state the nature and ownership of the land or claim thereto over which it is necessary to obtain a right-of-way in order to reach the surrounded claims, and the land description thereof by legal subdivisions if the land is surveyed, and give full details as to why present use of the right-of-way is denied or prevented and as to the steps which have been taken to acquire the right to use it. The petition should state whether any other right-of-way is available and if so, give reasons why it is not feasible or desirable to use that right-of-way.

(c) If the petition is based on other legal impediments, they must be set

out and their effect described in detail.

§ 3852.3 Notice of action on petition to be recorded.

The claimant must file or record, in the office in which he filed or recorded his notice of petition, a copy of the order or decision disposing of the petition.

§ 3852.4 Period for which deferment may be granted.

If the showing made is satisfactory, the authorized officer of the Bureau of Land Management will grant a deferment for an initial period not exceeding one year. The period shall begin on the date requested in the petition unless the approval sets a different date. Upon petition, the one year period may be renewed for another year if justifiable conditions exist. If the conditions justifying deferment are removed prior to the specified termination date of the deferment period, the deferment shall automatically be ended as of such earlier date.

§ 3852.5 When deferred assessment work is to be done.

All deferred assessment work may be begun at any time after the termination of the deferment but must be completed not later than the end of the assessment year commencing after the removal or cessation of the causes for the deferment or the expiration of any deferments granted under the act and shall be in addition to the annual assessment work required by law for such year.

PART 3860—MINERAL PATENT APPLICATIONS

Subpart 3861—Surveys and Plats

Sec.

3861.1 Surveys of mining claims.
3861.1-1 Application for survey.
3861.1-2 Survey must be made subsequent to recording notice of location.
3861.1-3 Plats and field notes of mineral surveys.
3861.2 Surveys; specific.
3861.2-1 Particulars to be observed in mineral surveys.
3861.2-2 Certificate of expenditures and improvements.
3861.2-3 Mineral surveyor's report of expenditures and improvements.
3861.2-4 Supplemental proof of expenditures and improvements.
3861.2-5 Amended mineral surveys.
3861.3 Mineral surveyors.
3861.3-1 Extent of duties.
3861.3-2 Assistants.
3861.4 Contract for surveys.
3861.4-1 Payment.
3861.5 Appointment and employment of mineral surveyors.
3861.5-1 Appointment.
3861.5-2 Employment.
3861.6 Plats and notices.
3861.6-1 Payment of charges of the public survey office.
3861.7 Posting.
3861.7-1 Plat and notice to be posted on claim.
3861.7-2 Proof of posting on the claim.

Subpart 3862—Lode Mining Claim Patent Applications

3862.1 Lode claim patent application; general.
3862.1-1 Application for patent.
3862.1-2 Service charge.
3862.1-3 Evidence of title.
3862.1-4 Evidence relating to destroyed or lost records.
3862.1-5 Statement required that land is unreserved, unoccupied, unimproved, and unappropriated.
3862.2 Citizenship.
3862.2-1 Citizenship of corporation and of association acting through agents.
3862.2-2 Citizenship of individuals.
3862.2-3 Trustee to disclose nature of trust.
3862.3 Possessory rights.
3862.3-1 Right by occupancy.
3862.3-2 Certificate of court required.
3862.3-3 Corroborative proof required.
3862.4 Publication of notice.
3862.4-1 Newspaper publication.
3862.4-2 Contents of published notice.
3862.4-3 Authorized officer to designate newspaper.
3862.4-4 Charges for publication.
3862.4-5 Proof by applicant of publication and posting.
3862.4-6 Payment of purchase price and statement of charges and fees.
3862.5 Entry and transfers.
3862.5-1 Allowance of entry; transfers subsequent to application not recognized.
3862.6 Diligent prosecution.
3862.6-1 Failure to prosecute application with diligence.
3862.7 Application processing upon contest or protest.

Sec.

3862.7-1 Resumption of patent proceedings after suspension due to adverse claim or protest.
3862.8 Patents for mining claims.
3862.8-1 Land descriptions in patents.

Subpart 3863—Placer Mining Claim Patent Applications

3863.1 Placer mining claim patent applications; general.
3863.1-1 Application for patent.
3863.1-2 Proof of improvements for patent.
3863.1-3 Data to be filed in support of application.
3863.1-4 Applications for placers containing known lodes.

Subpart 3864—Millsite Patents

3864.1 Millsite patents; general.
3864.1-1 Application for patent.
3864.1-2 Millsites applied for in conjunction with a lode claim.
3864.1-3 Millsites for quartz mills or reduction works.
3864.1-4 Proof of nonmineral character.

Subpart 3861—Surveys and Plats

SOURCE: 35 FR 9754, June 13, 1970, unless otherwise noted.

§ 3861.1 Surveys of mining claims.

§ 3861.1-1 Application for survey.

The claimant is required, in the first place, to have a correct survey of his claim made under authority of the proper cadastral engineer, such survey to show with accuracy the exterior surface boundaries of the claim, which boundaries are required to be distinctly marked by monuments on the ground. He is required to have a correct survey where patent is applied for and where the mining claim is in vein or lode formation, or covers lands not surveyed in accordance with the U.S. system of rectangular surveys, or where the mining claim fails to conform with the legal subdivisions of the federal surveys. Application for authorization of survey should be made to the appropriate land office (see § 1821.2-1 of this chapter).

[Circ. 2220, 31 FR 16785, Dec. 31, 1966]

§ 3861.1-2 Survey must be made subsequent to recording notice of location.

The survey and plat of mineral claims required to be filed in the proper office with application for patent must be made subsequent to the recording of the location of the claim (if the laws of the State or the regulations of the mining district require the notice of location to be recorded), and when the original location is made by survey of a mineral surveyor such location survey cannot be substituted for that required by the statute, as above indicated. All matters relating to the duties of mineral surveyors, and to the field and office procedure to be observed in the execution of mineral surveys, are set forth in Chapter X of the Manual of Instructions for the Survey of the Public Lands of the United States, 1947.

§ 3861.1-3 Plats and field notes of mineral surveys.

When the patent is issued, one copy of the plat and field notes shall accompany the patent and be delivered to the patentee.

§ 3861.2 Surveys; specific.

§ 3861.2-1 Particulars to be observed in mineral surveys.

(a) The following particulars should be observed in the survey of every mining claim:

(1) The exterior boundaries of the claim, the number of feet claimed along the vein, and, as nearly as can be ascertained, the direction of the vein, and the number of feet claimed on the vein in each direction from the point of discovery or other well-defined place on the claim should be represented on the plat of survey and in the field notes.

(2) The intersection of the lines of the survey with the lines of conflicting prior surveys should be noted in the field notes and represented upon the plat.

(3) Conflicts with unsurveyed claims, where the applicant for survey does not claim the area in conflict, should be shown by actual survey.

(4) The total area of the claim embraced by the exterior boundaries

should be stated, and also the area in conflict with each intersecting survey, substantially as follows:

	Acres
Total area of claim	10.50
Area in conflict with survey No. 302	1.56
Area in conflict with survey No. 948	2.33
Area in conflict with Mountain Maid lode mining claim, unsurveyed	1.48

(b) It does not follow that because mining surveys are required to exhibit all conflicts with prior surveys the area of conflict with prior surveys the area of conflict are to be excluded. The field notes and plat are made a part of the application for patent, and care should be taken that the description does not inadvertently exclude portions intended to be retained. The application for patent should state the portions to be excluded in express terms.

§ 3861.2-2 Certificate of expenditures and improvements.

(a) The claimant at the time of filing the application for patent, or at any time within the 60 days of publication, is required to file with the authorized officer a certificate of the office cadastral engineer that not less than $500 worth of labor has been expended or improvements made, by the applicant or his grantors, upon each location embraced in the application, or if the application embraces several contiguous locations held in common, that an amount equal to $500 for each location has been so expended upon, and for the benefit of, the entire group; that the plat filed by the claimant is correct; that the field notes of the survey, as filed, furnish such an accurate description of the claim as will, if incorporation in a patent, serve to identify the premises fully, and that such reference is made therein to natural objects or permanent monuments as will perpetuate and fix the locus thereof.

(b) In case of a lode and mill-site claim in the same survey the expenditure of $500 must be shown upon the lode claim.

§ 3861.2-3 Mineral surveyor's report of expenditures and improvements.

(a) In the mineral surveyor's report of the value of the improvements all actual expenditures and mining improvements made by the claimant or his grantors, having a direct relation to the development of the claim, must be included in the estimate.

(b) The expenditures required may be made from the surface or in running a tunnel, drifts, or crosscuts for the development of the claim. Expenditures for drill holes for the purpose of prospecting and securing data upon which further development of a group of lode mining claims held in common may be based are available toward meeting the statutory provision requiring an expenditure of $500 as a basis for patent as to all of the claims of the group situated in close proximity to such common improvement. Improvements of any other character, such as buildings, machinery, or roadways, must be excluded from the estimate, unless it is shown clearly that they are associated with actual excavations, such as cuts, tunnels, shafts, etc., are essential to the practical development of and actually facilitate the extraction of mineral from the claim.

(c) Improvements made by a former locator who has abandoned his claim cannot be included in the estimate, but should be described and located in the notes and plat.

§ 3861.2-4 Supplemental proof of expenditures and improvements.

If the value of the labor and improvements upon a mineral claim is less than $500 at the time of survey the mineral surveyor may file with the cadastral engineer supplemental proof showing $500 expenditure made prior to the expiration of the period of publication.

§ 3861.2-5 Amended mineral surveys.

(a) Inasmuch as amended surveys are ordered only by special instructions from the Bureau of Land Management, and the conditions and circumstances peculiar to each separate case and the object sought by the required amendment, alone govern all

special matters relative to the manner of making such survey and the form and subject matter to be embraced in the field notes thereof, but few general rules applicable to all cases can be laid down.

(b) The expense of amended surveys, including amendment of plat and field notes, and office work in the Bureau of Land Management office will be borne by the claimant.

(c) The amended survey must be made in strict conformity with, or be embraced within, the lines of the original survey. If the amended and original surveys are identical, that fact must be clearly and distinctly stated in the field notes. If not identical, a bearing and distance must be given from each established corner of the amended survey to the corresponding corner of the original survey. The lines of the original survey, as found upon the ground, must be laid down upon the preliminary plat in such manner as to contrast and show their relation to the lines of the amended survey.

§ 3861.3 Mineral surveyors.

§ 3861.3-1 Extent of duties.

The duty of a mineral surveyor in any particular case ceases when he has executed the survey and returned the field notes and preliminary plat, with his report, to the cadastral engineer. He will not be allowed to prepare for the mining claimant the papers in support of his application for patent. He is not permitted to combine the duties of surveyor and notary public in the same case by administering oaths. It is preferable that both preliminary and final oaths of assistants should be taken before some officer duly authorized to administer oaths, other than the mineral surveyor. In cases, however, where great delay, expense, or inconvenience would result from a strict compliance with this section, the mineral surveyor is authorized to administer the necessary oaths to his assistants, but in each case where this is done, he will submit to the proper cadastral engineer a full written report of the circumstances which required his stated action; otherwise he must have absolutely nothing to do with the case, except in his official capacity as surveyor. He will not employ field assistants interested therein in any manner.

§ 3861.3-2 Assistants.

The employing of claimants, their attorneys, or parties in interest, as assistants in making surveys of mineral claims will not be allowed.

§ 3861.4 Contract for surveys.

§ 3861.4-1 Payment.

(a) The claimant is required, in all cases, to make satisfactory arrangements with the surveyor for the payment for his services and those of his assistants in making the survey, as the United States will not be held responsible for the same.

(b) The state director has no jurisdiction to settle differences relative to the payment of charges for field work, between mineral surveyors and claimants. These are matters of private contract and must be enforced in the ordinary manner, i.e., in the local courts. The Department has, however, authority to investigate charges affecting the official actions of mineral surveyors, and will, on sufficient cause shown, suspend or revoke their appointment.

§ 3861.5 Appointment and employment of mineral surveyors.

§ 3861.5-1 Appointment.

Pursuant to section 2334 of the Revised Statutes (30 U.S.C. 39), the Director or his delegate will appoint only a sufficient number of surveyors for the survey of mining claims to meet the demand for that class of work. Each appointee shall qualify as prescribed by the Director or his delegate. Applications for appointment as a mineral surveyor may be made at any office of the Bureau of Land Management listed in § 1821.2-1 of these regulations. A roster of appointed mineral surveyors will be available at these offices. Each appointee may execute mineral surveys in any State where mineral surveys are authorized.

[38 FR 30001, Oct. 31, 1973]

§ 3861.5-2 Employment.

A mineral claimant may employ any United States mineral surveyor qualified as indicated in paragraph (a) of this section to make the survey of his claim. All expenses of the survey of mining claims and the publication of the required notices of application for patent are to be borne by the mining claimants.

§ 3861.6 Plats and notices.

§ 3861.6-1 Payment of charges of the public survey office.

With regard to the platting of the claim and other office work in the Bureau of Land Management office, including the preparation of the copies of the plat and field notes to be furnished the claimant, that office will make an estimate of the cost thereof, which amount the claimant will deposit with it to be passed to the credit of the fund created by "Deposits by Individuals for Surveying Public Lands."

§ 3861.7 Posting.

§ 3861.7-1 Plat and notice to be posted on claim.

The claimant is required to post a copy of the plat of survey in a conspicuous place upon the claim, together with notice of his intention to apply for a patent therefor, which notice will give the date of posting, the name of the claimant, the name of the claim, the number of the survey, the mining district and county, and the names of adjoining and conflicting claims as shown by the plat of survey.

§ 3861.7-2 Proof of posting on the claim.

After posting the said plat and notice upon the premises the claimant will file with the proper manager two copies of such plat and the field notes of survey of the claim, accompanied by two copies of the statement of at least two credible witnesses that such plat and notice are posted conspicuously upon the claim, giving the date and place of such posting, and two copies of the notice so posted to be attached to and form a part of said statement.

Subpart 3862—Lode Mining Claim Patent Applications

Source: 35 FR 9756, June 13, 1970, unless otherwise noted.

§ 3862.1 Lode claim patent application; general.

§ 3862.1-1 Application for patent.

(a) At the time the proof of posting is filed the claimant must file in duplicate an application for patent showing that he has the possessory right to the claim, in virtue of a compliance by himself (and by his grantors, if he claims by purchase) with the mining rules, regulations, and customs of the mining district or State in which the claim lies, and with the mining laws of Congress, such statement to narrate briefly, but as clearly as possible, the facts constituting such compliance, the origin of his possession, and the basis of his claim to a patent. The application should contain a full description of the kind and character of the vein or lode and should state whether ore has been extracted therefrom; and if so, in what amount and of what value. It should also show the precise place within the limits of each of the locations embraced in the application where the vein or lode has been exposed or discovered and the width thereof. The showing in these regards should contain sufficient data to enable representatives of the Government to confirm the same by examination in the field and also enable the Bureau of Land Management to determine whether a valuable deposit of mineral actually exists within the limits of each of the locations embraced in the application.

(b) Every application for patent, based on a mining claim located after August 1, 1946, shall state whether the claimant has or has not had any direct or indirect part in the development of the atomic bomb project. The application must set forth in detail the exact nature of the claimant's participation in the project, and must also state whether as a result of such participation he acquired any confidential, official information as to the existence of deposits of uranium, thorium, or other

fissionable source materials in the lands covered by his application.

(c) In applying for patent to a mining claim embracing land lying partly within one proper office and partly within another, a full set of papers must be filed in each office, except that one abstract of title and one proof of patent expenditures will be sufficient. Only one newspaper publication and one posting on the claim will be required, but proof thereof must be filed in both offices, the statements as to posting plat and notice on the claim to be signed within the respective land districts, as well, also, as all of the other statements required in mineral patent proceedings, except such as, under the law, may be signed outside of the land district wherein the land applied for is situated. Publication, payment of fees, and the purchase price of the land will be further governed by the provisions of § 1823.4(a) and § 1861.2 of this chapter.

§ 3862.1-2 Service charge.

The service charge payable to the Bureau of Land Management for filing and acting upon applications for mineral-land patents is $25 to be paid by the applicant for patent at the time of filing. This charge is not refundable.

§ 3862.1-3 Evidence of title.

(a) Each patent application must be supported by either a certificate of title or an abstract of title certified to by the legal custodian of the records of locations and transfers of mining claims or by an abstracter of titles. The certificate of title or certificate to an abstract of title must be by a person, association, or corporation authorized by the State laws to execute such a certificate and acceptable to the Bureau of Land Management.

(b) A certificate of title must conform substantially to a form approved by the Director.

(c) Each certificate of title or abstract of title must be accompanied by single copies of the certificate or notice of the original location of each claim, and of the certificates of amended or supplemental locations thereof, certified to by the legal custodian of the record of mining locations.

(d) A certificate to an abstract of title must state that the abstract is a full, true, and complete abstract of the location certificates or notices, and all amendments thereof, and of all deeds, instruments, or actions appearing of record purporting to convey or to affect the title to each claim.

(e) The application for patent will be received and filed if the certificate of title or an abstract is brought down to a day reasonably near the date of the presentation of the application and shows full title in the applicant, who must as soon as practicable thereafter file a supplemental certificate of title or an abstract brought down so as to include the date of the filing of the application.

§ 3862.1-4 Evidence relating to destroyed or lost records.

In the event of the mining records in any case having been destroyed by fire or otherwise lost, a statement of the fact should be made, and secondary evidence of possessory title will be received, which may consist of the statement of the claimant, supported by those of any other parties cognizant of the facts relative to his location, occupancy, possession, improvements, etc.; and in such case of lost records, any deeds, certificates of location or purchase, or other evidence which may be in the claimant's possession and tend to establish his claim, should be filed.

§ 3862.1-5 Statement required that land is unreserved, unoccupied, unimproved, and unappropriated.

Each person making application for patent under the mining laws, for lands in Alaska, must furnish a duly corroborated statement showing that no portion of the land applied for is occupied or reserved by the United States, so as to prevent its acquisition under said laws; that the land is not occupied or claimed by natives of Alaska; and that the land is unoccupied, unimproved and unappropriated by any person claiming the same other than the applicant.

§ 3862.2 Citizenship.

§ 3862.2-1 Citizenship of corporations and of associations acting through agents.

The proof necessary to establish the citizenship of applicants for mining patents must be made in the following manner: In case of an incorporated company, a certified copy of its charter or certificate of incorporation must be filed. In case of an association of persons unincorporated, the statement of their duly authorized agent, made upon his own knowledge or upon information and belief, setting forth the residence of each person forming such association, must be submitted. This statement must be accompanied by a power of attorney from the parties forming such association, authorizing the person who makes the citizenship showing to act for them in the matter of their application of patent.

§ 3862.2-2 Citizenship of individuals.

(a) In case of an individual or an association of individuals who do not appear by their duly authorized agent, the statement of each applicant, showing whether he is a native or naturalized citizen, when and where born, and his residence, will be required.

(b) In case an applicant has declared his intention to become a citizen or has been naturalized, his statement must show the date, place, and the court before which he declared his intention, or from which his certificate of citizenship issued, and present residence.

§ 3862.2-3 Trustee to disclose nature of trust.

Any party applying for patent as trustee must disclose fully the nature of the trust and the name of the cestui que trust; and such trustee, as well as the beneficiaries, must furnish satisfactory proof of citizenship; and the names of beneficiaries, as well as that of the trustee, must be inserted in the final certificate of entry.

§ 3862.3 Possessory rights.

§ 3862.3-1 Right by occupancy.

(a) The provisions of R.S. 2332 (30 U.S.C. 38), greatly lessen the burden of proof, more especially in the case of old claims located many years since, the records of which, in many cases, have been destroyed by fire, or lost in other ways during the lapse of time, but concerning the possessory right to which all controversy or litigation has long been settled.

(b) When an applicant desires to make his proof of possessory right in accordance with this provision of law, he will not be required to produce evidence of location, copies of conveyances, or abstracts of title, as in other cases, but will be required to furnish a duly certified copy of the statute of limitation of mining claims for the State, together with his statement giving a clear and succinct narration of the facts as to the origin of his title, and likewise as to the continuation of his possession of the mining ground covered by his application; the area thereof; the nature and extent of the mining that has been done thereon; whether there has been any opposition to his possession, or litigation with regard to his claim, and if so, when the same ceased; whether such cessation was caused by compromise or by judicial decree, and any additional facts within the claimant's knowledge having a direct bearing upon his possession and bona fides which he may desire to submit in support of his claim.

§ 3862.3-2 Certificate of court required.

There should likewise be filed a certificate, under seal of the court having jurisdiction of mining cases within the judicial district embracing the claim, that no suit or action of any character whatever involving the right of possession to any portion of the claim applied for is pending, and that there has been no litigation before said court affecting the title to said claim or any part thereof for a period equal to the time fixed by the statute of limitations for mining claims in the State as aforesaid other than that which has been finally decided in favor of the claimant.

§ 3862.3-3 Corroborative proof required.

The claimant should support his narrative of facts relative to his possession, occupancy, and improvements

by corroborative testimony of any disinterested person or persons of credibility who may be cognizant of the facts in the case and are capable of testifying understandingly in the premises.

§ 3862.4 Publication of notice.

§ 3862.4-1 Newspaper publication.

Upon the receipt of applications for mineral patent and accompanying papers, if no reason appears for rejecting the application, the authorized officer will, at the expense of the claimant (who must furnish the agreement of the publisher to hold applicant for patent alone responsible for charges of publication), publish a notice of such application for the period of 60 days in a newspaper published nearest to the claim. If the notice is published in a daily paper, it shall be published in the Wednesday issue for nine consecutive weeks; if weekly, in nine consecutive issues; if semiweekly or triweekly, in the issue of the same day of each week for nine consecutive weeks. In all cases the first day of issues shall be excluded in estimating the period of 60 days.

[35 FR 9756, June 13, 1970, as amended at 41 FR 21642, May 27, 1976]

§ 3862.4-2 Contents of published notice.

The notices published as required by the preceding section must embrace all the data given in the notice posted upon the claim. In addition to such data the published notice must further indicate the locus of the claim by giving the connecting line, as shown by the field notes and plat, between a corner of the claim and a United States mineral monument or a corner of the public survey, and thence the boundaries of the claim by courses and distances.

§ 3862.4-3 Authorized officer to designate newspaper.

The authorized officer shall have the notice of application for patent published in a paper of established character and general circulation, to be by him designated as being the newspaper published nearest the land.

§ 3862.4-4 Charges for publication.

(a) The charge for the publication of notice of application for patent in a mining case in all districts shall not exceed the legal rates allowed by the laws of the several States for the publication of legal notices wherein the notice is published.

(b) It is expected that these notices shall not be so abbreviated as to curtail the description essential to a perfect notice, and on the other hand that they shall not be of unnecessary length. The printed matter must be set solid without paragraphing or any display in the heading and shall be in the usual body type used in legal notices. If other type is used, no allowance will be made for additional space on that account. The number of solid lines only used in advertising by actual count will be allowed. All abbreviations and copy must be strictly followed. The following is a sample of advertisement set up in accordance with Government requirements and contains all the essential data necessary for publication:

M. A. No. 04421, U. S. Land Office, Elko, Nevada, October 5, 1921. Notice is hereby given that the Jarbidge Buhl Mining Company by W. H. Hudson, attorney in fact, of Jarbidge, Nevada, has made application for patent to the Altitude, Altitude No. 1, Altitude No. 3, and Altitude Annex, lode mining claims. Survey No. 4470, in unsurveyed T. 46 N., R. 58 E., M. D. B. and M., in the Jarbidge mining district, Elko County, Nevada, described as follows: Beginning at corner No. 1, Altitude No. 3, whence the quarter corner of the south boundary of sec. 34 T. 46 N., R. 58 E., M. D. B. and M., bears south 41°54' west 7285.63 feet, thence north 20°14' west 1500 feet to corner No. 2 of said lode; thence north 69°46' east 569 feet to corner No. 3 of said lode; thence south 20°14' east 417.5 feet to corner 2, Altitude No. 1; thence north 69°46' east 1606.1 feet to corner No. 3, Altitude lode; thence south 20°14' east 1500 feet, to corner No. 4 of said lode; thence south 69°46' west 1606.1 feet, to corner No. 1, Altitude No. 1 lode; thence North 20°14' west 417.5 feet to corner No. 4, Altitude No. 3; thence south 69°46' west 569 feet to point of beginning. There are no adjoining or conflicting claims. The location notices are recorded in Book 17, pages 373 and 374, and in Book 15, pages 52 and 53, mining locations, Elko County, Nevada. John E. Robbins, Manager.

(c) For the publication of citations in contests or hearings, involving the character of lands, the charges may not exceed the rates provided for similar notices by the law of the State.

§ 3862.4–5 Proof by applicant of publication and posting.

After the 60-day period of newspaper publication has expired, the claimant will furnish from the office of publication a sworn statement that the notice was published for the statutory period, giving the first and last day of such publication, and his own statement showing that the plat and notice aforesaid remained conspicuously posted upon the claim sought to be patented during said 60-day publication, giving the dates.

§ 3862.4–6 Payment of purchase price and statement of charges and fees.

Upon the filing of the statement required by the preceding section, the authorized officer will, if no adverse claim was filed in his office during the period of publication, and no other objection appears, permit the claimant to pay for the land to which he is entitled at the rate of $5 for each acre and $5 for each fractional part of an acre, except as otherwise provided by law, issuing the usual receipt therefor. The claimant will also make a statement of all charges and fees paid by him for publication and surveys, together with all fees and money paid the authorized officer of the proper office, and a patent shall be issued thereon if found regular.

§ 3862.5 Entry and transfers.

§ 3862.5–1 Allowance of entry; transfers subsequent to application not recognized.

No entry will be allowed until the authorized officer has satisfied himself, by careful examination, that proper proofs have been filed upon the points indicated in the law and official regulations. Transfers made subsequent to the filing of the application for patent will not be considered, but entry will be allowed and patent issued in all cases in the name of the applicant for patent, the title conveyed by the patent, of course, in each instance inuring to the transferee of such applicant where a transfer has been made pending the application for patent.

§ 3862.6 Diligent prosecution.

§ 3862.6–1 Failure to prosecute application with diligence.

The failure of an applicant for patent to a mining claim to prosecute his application to completion, by filing the necessary proofs and making payment for the land, within a reasonable time after the expiration of the period of publication of notice of the application, or after the termination of adverse proceedings in the courts, constitutes a waiver by the applicant of all rights obtained by the earlier proceedings upon the application.

§ 3862.7 Application processing upon contest or protest.

§ 3862.7–1 Resumption of patent proceedings after suspension due to adverse claim or protest.

The proceedings necessary to the completion of an application for patent to a mining claim, against which an adverse claim or protest has been filed, if taken by the applicant at the first opportunity afforded therefor under the law and departmental practice, will be as effective as if taken at the date when, but for the adverse claim or protest, the proceedings on the application could have been completed.

§ 3862.8 Patents for mining claims.

§ 3862.8–1 Land descriptions in patents.

The land description in a patent for a lode mining claim, for a millsite, or for a placer claim not consisting of legal subdivisions, shall hereafter consist of the names and survey numbers of the claims being patented and those being excluded, or of the names of the excluded claims if they are unsurveyed, or of the legal subdivisions of excluded land covered by homestead or other nonmineral entry. The land description shall refer to the field notes of survey and the plat thereof for a more particular description and the patent shall expressly make them a part thereof. Where shown by the

33-151 O—85—52

mineral entry the patent shall give the actual or approximate legal subdivision, section, township and range, the name of the county and of the mining district, if any, wherein the claims are situated. A copy of the plat and field notes of each mineral survey patented will be furnished to the patentee.

Subpart 3863—Placer Mining Claim Patent Applications

SOURCE: 35 FR 9758, June 13, 1970, unless otherwise noted.

§ 3863.1 Placer mining claim patent applications; general.

(a) The proceedings to obtain patents for placer claims, including all forms of mineral deposits excepting veins of quartz or other rock in place, are similar to the proceedings prescribed for obtaining patents for vein or lode claims; but where a placer claim shall be upon surveyed lands, and conforms to legal subdivisions, no further survey or plat will be required. Where placer claims cannot be conformed to legal subdivisions, survey and plat shall be made as on unsurveyed lands.

(b) The price of placer claims is fixed at $2.50 per acre or fractional part of an acre.

§ 3863.1–1 Application for patent.

§ 3863.1–2 Proof of improvements for patent.

The proof of improvements must show their value to be not less than $500 and that they were made by the applicant for patent or his grantors. This proof should consist of the statement of two or more disinterested witnesses.

§ 3863.1–3 Data to be filed in support of application.

(a) In placer applications, in addition to the recitals necessary in and to both vein or lode and placer applications, the placer application should contain, in detail, such data as will support the claim that the land applied for is placer ground containing valuable mineral deposits not in vein or lode formation and that title is sought not to control water courses or to obtain valuable timber but in good faith because of the mineral therein. This statement, of course, must depend upon the character of the deposit and the natural features of the ground, but the following details should be covered as fully as possible: If the claim be for a deposit of placer gold, there must be stated the yield per pan, or cubic yard, as shown by prospecting and development work, distance to bedrock, formation and extent of the deposit, and all other facts upon which he bases his allegation that the claim is valuable for its deposits of placer gold. If it be a building stone or other deposit than gold claimed under the placer laws, he must describe fully the kind, nature, and extent of the deposit, stating the reasons why same is by him regarded as a valuable mineral claim. He will also be required to describe fully the natural features of the claim; streams, if any, must be fully described as to their course, amount of water carried, fall within the claim; and he must state kind and amount of timber and other vegetation thereon and adaptability to mining or other uses.

(b) If the claim be all placer ground, that fact must be stated in the application and corroborated by accompanying proofs; if of mixed placers and lodes, it should be so set out, with a description of all known lodes situated within the boundaries of the claim. A specific declaration, such as is required by R.S. 2333 (30 U.S.C. 37) must be furnished as to each lode intended to be claimed. All other known lodes are, by the silence of the applicant, excluded by law from all claim by him, of whatsoever nature, possessory or otherwise.

(c) While these data are required as a part of the mineral surveyor's report in case of placers taken by special survey, it is proper that the application for patent incorporate these facts.

(d) Inasmuch as in case of claims taken by legal subdivisions, no report by a mineral surveyor is required, the claimant, in his application in addition to the data above required, should describe in detail the shafts, cuts, tunnels, or other workings claimed as improvements, giving their dimensions, value, and the course and distance

thereof to the nearest corner of the public surveys.

(e) The statement as to the description and value of the improvements must be corroborated by the statements of two disinterested witnesses. The proof showing must be made in duplicate. See 51 L.D. 265 and 52 L.D. 190.

(f) Applications awaiting entry, whether published or not, must be made to conform to this part, with respect to proof as to the character of the land. Entries already made will be suspended for such additional proofs as may be deemed necessary in each case.

§ 3863.1-4 Applications for placers containing known lodes.

Applicants for patent to a placer claim, who are also in possession of a known vein or lode included therein, must state in their application that the placer includes such vein or lode. The published and posted notices must also include such statement. If veins or lodes lying within placer locations are owned by other parties, the fact should be distinctly stated in the application for patent and in all the notices. But in all cases whether the lode is claimed or excluded, it must be surveyed and marked upon the plat, the field notes and plat giving the area of the lode claim or claims and the area of the placer separately. An application which omits to claim such known vein or lode must be construed as a conclusive declaration that the applicant has no right of possession to the vein or lode. Where there is no known lode or vein, the fact must appear by the statement of two or more witnessess.

Subpart 3864—Millsite Patents

SOURCE: 35 FR 9758, June 13, 1970, unless otherwise noted.

§ 3864.1 Millsite patents; general.

§ 3864.1-1 Application for patent.

(a) Land entered as a millsite must be shown to be nonmineral. Millsites are simply auxiliary to the working of mineral claims. R.S. 2337 (30 U.S.C. 42) provides for the patenting of millsites.

(b) To avail themselves of this provision of law, parties holding the possessory right to a vein or lode claim, and to a piece of nonmineral land not contiguous thereto for mining or milling purposes, not exceeding the quantity allowed for such purpose by R.S. 2337, or prior laws, under which the land was appropriated, the proprietors of such vein or lode may file in the proper office their application for a patent, which application, together with the plat and field notes, may include, embrace, and describe, in addition to the vein or lode claim, such noncontiguous millsite, and after due proceedings as to notice, etc., a patent will be issued conveying the same as one claim. The owner of a patented lode may, by an independent application, secure a millsite, if good faith is manifest in its use or occupation in connection with the lode and no adverse claim exists.

(c) The Act of March 18, 1960 (74 Stat. 7; 43 U.S.C. 42(b)), amends R.S. 2337 to allow the holders of possessory right in a placer claim to hold nonmineral land for mining, milling, processing beneficiation, or other operations in connection with the placer claim. Applications for patent for such millsites are subject to the same requirements as to survey and notice as one applicable to placer mining claims. No one millsite may exceed five acres and payment will be $2.50 per acre or fraction thereof.

§ 3864.1-2 Millsites applied for in conjunction with a lode claim.

Where the original survey includes a lode claim and also a millsite the lode claim should be described in the plat and field notes as "Sur. No. 37, A," and the millsite as "Sur. No. 37, B," or whatever may be its appropriate numerical designation; the course and distance from a corner of the millsite to a corner of the lode claim to be invariably given in such plat and field notes, and a copy of the plat and notice of application for patent must be conspicuously posted upon the millsite as well as upon the vein or lode claim for the statutory period of 60

days. In making the entry no separate receipt or certificate need be issued for the millsite, but the whole area of both lode and millsite will be embraced in one entry, the price being $5 for each acre and fractional part of an acre embraced by such lode and millsite claim.

§ 3864.1-3 Millsites for quartz mills or reduction works.

In case the owner of a quartz mill or reduction works is not the owner or claimant of a vein or lode claim the law permits him to make application therefor in the same manner prescribed for mining claims, and after due notice and proceedings, in the absence of a valid adverse filing, to enter and receive a patent for his millsite at the price named in the preceding section.

§ 3864.1-4 Proof of nonmineral character.

In every case there must be satisfactory proof that the land claimed as a millsite is not mineral in character, which proof may, where the matter is unquestioned, consist of the statement of two or more persons capable, from acquaintance with the land to testify understandingly.

PART 3870—ADVERSE CLAIMS, PROTESTS AND CONFLICTS

Subpart 3871—Adverse Claims

Sec.

3871.1 Filing of claim.
3871.2 Statement of claim.
3871.3 Action by authorized officer.
3871.4 Patent proceedings stayed when adverse claim is filed; exception.
3871.5 Termination of adverse suit.
3871.6 Certificate required when no suit commenced.

Subpart 3872—Protests, Contests and Conflicts

3872.1 Protest against mineral applications.
3872.2 Procedure in contest cases.
3872.3 Presumption as to land returned as mineral.
3872.4 Procedure to dispute record character of land.
3872.5 Testimony at hearings to determine character of lands.

Sec.

Subpart 3873—Segregation

3873.1 Segregation of mineral from nonmineral land.
3873.2 Effect of decision that land is mineral.
3873.3 Non-mineral entry of residue of subdivisions invaded by mining claims.

Subpart 3871—Adverse Claims

SOURCE: 35 FR 9759, June 13, 1970, unless otherwise noted.

§ 3871.1 Filing of claim.

(a) An adverse claim must be filed with the authorized officer of the proper office where the application for patent is filed or with the manager of the district in which the land is situated at the time of filing the adverse claim. The claim may be filed by the adverse claimant, or by his duly authorized agent or attorney in fact cognizant of the facts stated.

(b) Where an agent or attorney in fact files the adverse claim he must furnish proof that he is such agent or attorney.

(c) The agent or attorney in fact must sign the statement of the adverse claim within the land district where the claim is situated, stating that it was so signed.

(d) A fee of $10 is payable by an adverse claimant at the time of filing his adverse claim. This charge is not refundable.

§ 3871.2 Statement of claim.

(a) The adverse claim must fully set forth the nature and extent of the interference or conflict; whether the adverse party claims as a purchaser for valuable consideration or as a locator. If the former, a certified copy of the original location, the original conveyance, a duly certified copy thereof, or an abstract of title from the office of the proper recorder should be furnished, or if the transaction was a merely verbal one he will narrate the circumstances attending the purchase, the date thereof, and the amount paid, which facts should be supported by the statement of one or more witnesses, if any were present at the time, and if he claims as a locator he must

file a duly certified copy of the location from the office of the proper recorder.

(b) In order that the "boundaries" and "extent" of the claim may be shown, it will be incumbent upon the adverse claimant to file a plat showing his entire claim, its relative situation or position with the one against which he claims, and the extent of the conflict: *Provided, however,* That if the application for patent describes the claim by legal subdivisions, the adverse claimant, if also claiming by legal subdivisions, may describe his adverse claim in the same manner without further survey or plat. If the claim is not described by legal subdivisions it will generally be more satisfactory if the plat thereof is made from an actual survey by a mineral surveyor and its correctness officially certified thereon by him.

§ 3871.3 Action by authorized officer.

(a) Upon the adverse claim being filed within the 60-day period of publication, the authorized officer will immediately give notice in writing to the parties that such adverse claim has been filed, informing them that the party who filed the adverse claim will be required within 30 days from the date of such filing to commence proceedings in a court of competent jurisdiction to determine the question of right of possession, and to prosecute the same with reasonable diligence to final judgment, and that should such adverse claimant fail to do so, his adverse claim will be considered waived and the application for patent be allowed to proceed upon its merits.

(b) The Act of September 21, 1961 (Pub. L. 87-260; 75 Stat. 541), amends the Act of June 7, 1910 (36 Stat. 459; 48 U.S.C. 386), and provides that adverse suits against mineral entries in Alaska shall be instituted within the 60-day time limit set forth in R.S. 2325 and 2326, (30 U.S.C. 29, 30). The act further provides that where a mineral patent application was filed prior to the effective date of the act, the time in which to file adverse suits is governed by the Act of June 7, 1910. Where a mineral patent application was filed prior to September 21, 1961, the entry will not be allowed until after the expiration of eight months following the publication period.

§ 3871.4 Patent proceedings stayed when adverse claim is filed; exception.

When an adverse claim is filed as aforesaid, the authorized officer will endorse upon the same the precise date of filing and preserve a record of the date of notifications issued thereon; and thereafter all proceedings on the application for patent will be stayed with the exception of the completion of the publication and posting of notices and plat and the filing of the necessary proof thereof, until the controversy shall have been finally adjudicated in court or the adverse claim waiver or withdrawn.

§ 3871.5 Termination of adverse suit.

(a) Where an adverse claim has been filed and suit thereon commenced within the statutory period and final judgment rendered determining the right of possession, it will not be sufficient to file with the authorized officer a certificate of the clerk of the court setting forth the facts as to such judgment, but the successful party must, before he is allowed to make entry, file a certified copy of the judgment roll, together with the other evidence required by R.S. 2326 (30 U.S.C. 30), and a certificate of the clerk of the court under the seal of the court showing, in accord with the record facts of the case, that the judgment mentioned and described in the judgment roll aforesaid is a final judgment; that the time for appeal therefrom has, under the law, expired, and that no such appeal has been filed, or that the defeated party has waived his right to appeal. Other evidence showing such waiver or an abandonment of the litigation may be filed.

(b) Where such suit has been dismissed, a certificate of the clerk of the court to that effect or a certified copy of the order of dismissal will be sufficient.

(c) After an adverse claim has been filed and suit commenced, a relinquishment or other evidence of abandonment of the adverse claim will not be accepted, but the case must be terminated and proof thereof furnished as required by the last two paragraphs.

§ 3871.6 Certificate required when no suit commenced.

Where an adverse claim has been filed but no suit commenced against the applicant for patent within the statutory period, a certificate to that effect by the clerk of the State court having jurisdiction in the case, and also by the clerk of the district court of the United States for the district in which the claim is situated, will be required.

Subpart 3872—Protests, Contests and Conflicts

SOURCE: 35 FR 9760, June 13, 1970, unless otherwise noted.

§ 3872.1 Protest against mineral applications.

(a) At any time prior to the issuance of patent, protest may be filed against the patenting of the claim as applied for, upon any ground tending to show that the applicant has failed to comply with the law in any matter essential to a valid entry under the patent proceedings. Such protest cannot, however, be made the means of preserving a surface conflict lost by failure to adverse or lost by the judgment of the court in an adverse suit. One holding a present joint interest in a mineral location included in an application for patent who is excluded from the application, so that his interest would not be protected by the issue of patent thereon, may protest against the issuance of a patent as applied for, setting forth in such protest the nature and extent of his interest in such location, and such a protestant will be deemed a party in interest entitled to appeal. This results from the holding that a co-owner excluded from an application for patent does not have an "adverse" claim within the meaning of R.S. 2325 and 2326 (30 U.S.C. 29, 30). (See Turner v. Sawyer, 150 U.S. 578-586, 37 L. ed. 1189-1191.)

(b) Such protest filed by any party, other than a Federal agency, must be accompanied by a $10 nonrefundable service charge.

§ 3872.2 Procedure in contest cases.

Parts 1840 and 1850 of this chapter, in cases before the United States, the Bureau of Land Management, and the Department of the Interior will, so far as applicable, govern in all cases and proceedings arising in contests and hearings to determine the character of lands.

§ 3872.3 Presumption as to land returned as mineral.

Public land returned upon the survey records as mineral shall be withheld from entry as agricultural land until the presumption arising from such a return shall be overcome.

§ 3872.4 Procedure to dispute record character of land.

(a) When lands returned as mineral are sought to be entered as agricultural under laws which require the submission of final proof after due notice by publication and posting, the filing of the proper nonmineral statement in the absence of allegations that the land is mineral will be deemed sufficient as a preliminary requirement. A satisfactory showing as to character of land must be made when final proof is submitted.

(b) In case of application to enter, locate, or select such lands as agricultural, under laws in which the submission of final proof after due publication and posting is not required, notice thereof must first be given by publication for 60 days and posting in the local office during the same period, and affirmative proof as to the character of the land submitted. In the absence of allegations that the land is mineral, and upon compliance with this requirement, the entry location, or selection will be allowed, if otherwise regular.

(c) Where as against the claimed right to enter such lands as agricultural it is alleged that the same are mineral, or are applied for as mineral lands, the proceedings in this class of cases will be in the nature of a contest, and the practice will be governed by the rules in force in contest cases.

§ 3872.5 Testimony at hearings to determine character of lands.

(a) At hearings to determine the character of lands the claimants and witnesses will be thoroughly examined with regard to the character of the land; whether the same has been thoroughly prospected; whether or not there exists within the tract or tracts claimed any lode or vein of quartz or other rock in place bearing gold, silver, cinnabar, lead, tin, copper, or other valuable deposit which has ever been claimed, located, recorded, or worked; whether such work is entirely abandoned, or whether occasionally resumed; if such lode does exist, by whom claimed, under what designation, and in which subdivision of the land it lies; whether any placer mine or mines exist upon the land; if so, what is the character thereof, whether of the shallow-surface description, or of the deep cement, blue lead, or gravel deposits; to what extent mining is carried on when water can be obtained, and what the facilities are for obtaining water for mining purposes; upon what particular 10-acre subdivisions mining has been done, and at what time the land was abandoned for mining purposes, if abandoned at all. In every case, where practicable, an adequate quantity or number of representative samples of the alleged mineral-bearing matter or material should be offered in evidence, with proper identification, to be considered in connection with the record, with which they will be transmitted upon each appeal that may be taken. Testimony may be submitted as to the geological formation and development of mineral on adjoining or adjacent lands and their relevancy.

(b) The testimony should also show the agricultural capacities of the land, what kind of crops are raised thereon, the value thereof; the number of acres actually cultivated for crops of cereals or vegetables, and within which particular 10-acre subdivision such crops are raised; also which of these subdivisions embrace the improvements, giving in detail the extent and value of the improvements, such as house, barn, vineyard, orchard, fencing, etc., and mining improvements.

(c) The testimony should be as full and complete as possible; and in addition to the leading points indicated above, where an attempt is made to prove the mineral character of lands which have been entered under the agricultural laws, it should show at what date, if at all, valuable deposits of minerals were first known to exist on the lands.

Subpart 3873—Segregation

Source: 35 FR 9760, June 13, 1970, unless otherwise noted.

§ 3873.1 Segregation of mineral from non-mineral land.

Where a survey is necessary to set apart mineral from non-mineral land the appropriate authorized officer will have special instructions prepared outlining the procedure to be followed in the required survey. The survey will be executed at the expense of the United States. Where, in stock-raising homestead entries, it has been satisfactorily established that there are existent prior unpatented mining claims, the segregation of the latter is not strictly a segregation of mineral from non-mineral land, but rather the procedure adopted to define the boundaries of and provide a legal description for that part of the homestead entry which is not within the segregated mining claims.

§ 3873.2 Effect of decision that land is mineral.

The fact that a certain tract of land is decided upon testimony to the mineral in character is by no means equivalent to an award of the land to a miner. In order to secure a patent for such land, he must proceed as in other cases, in accordance with this part.

§ 3873.3 Non-mineral entry of residue of subdivisions invaded by mining claims.

(a) The authorized officer will accept and approve any application (if otherwise regular), to make a non-mineral entry of the residue of any original lot or legal subdivision which is invaded by mining claims if the tract has already been lotted to exclude such claims. If not so lotted, and if the

original lot or legal subdivision is invaded by patented mining claims, or by mining claims covered by pending applications for patent which the non-mineral applicant does not desire to contest, or by approved mining claims of established mineral character, the authorized officer will accept and approve the application (if otherwise regular), exclusive of the conflict with the mining claims.

(b) The authorized officer will allow no non-mineral application for any portion of an original lot or 40-acre legal subdivision, where the tract has not been lotted to show the reduced area by reason of approved surveys of mining claims for which applications for patent have not been filed, until the non-mineral applicant submits a satisfactory showing that such surveyed claims are in fact mineral in character. Applications to have lands which are asserted to be mineral, or mining locations, segregated by survey with a view to the non-mineral appropriation of the remainder, will be made to the authorized officer of the proper office. Such applications must be supported by a written statement of the party in interest, duly corroborated by two or more disinterested persons, or by such other or further evidence as may be required, that the land sought to be segregated as mineral is in fact mineral in character.

PARTS 3874–3999 [RESERVED]

ADMINISTRATIVE PROCEDURES, FIELD AND LABORATORY EXAMINATIONS

Administrative Procedures

Administrative mineral patent procedures used by the BLM are outlined in Instruction Memorandum No. CA 83-294, June 2, 1983. A copy of this memorandum may be obtained from the BLM Mineral Division, California State Office (CSO), Room E-2727, 2800 Cottage Way, Sacramento, California 95825, (916) 978-4740.

Field Procedures

The following outline shows our approach to field examination procedures for validity and patent determinations of mining claims. It is important that the claimant be given a 30-day written notice (by registered mail). After the letter is sent a follow-up call should be made to arrange for a suitable time for the field examination. Examination dates can be postponed for reasonable causes, such as illness, but not indefinitely or when there appears to be an effort to evade the examination.

Pre-Exam Data Gathering Preparation and Procedures:

1. Examine case file for completeness.
2. Obtain and examine legal data, CA MC files, location notices, NOI to hold or patent, assessment work forms, encumbrances of title, and so forth.
3. Check mineral survey and notes.
4. Assemble and examine topographic maps, geologic maps, and air photos.
5. Assemble and examine technical references, geology, mineralization, mining, mineral economics.
6. Obtain and carry mine and trench safety orders (BLM, CSO IM CA-85-263, 4/30/85).
7. Assemble all needed field equipment.
8. Appoint party chief if more than one examiner.

Examination:

1. Meet and discuss examination procedures and practice with claimant.
2. Make diligent search for claim corners and discovery monuments.
3. Walk the claim and get a "feel" for it.

4. Prepare geologic map of claim or verify already prepared geologic maps; preferably on top map.

   a. Map and plot surface features--rock unit, structures, etc.

   b. Map and plot mine works on surface--also geology.

   c. Map and plot underground works--also geology.

   d. Take numerous photographs-all claim corners, monuments, geologic and mining features.

5. Analyses of discovery area is conducted last:

   a. Pay special attention here--ask claimant to identify areas.

   b. Prepare or check maps, sketches, conduct sampling, in appropriate manner and at appropriate scales.

6. Work up maps and sketches in field--catch errors so return trip is not needed. Proper field notes in proper format must be taken.

7. Gather all information possible from claimant and reports he may have on technical and economic data, costs, and so forth.

8. Photograph and sketch all mill and plant facilities, obtain flow sheet if available, make one if not.

9. Write up report--all data in report--full disclosure for technical reviewer, except confidential data can be summarized, or pertinent parts quoted.

SAMPLING AND LABORATORY PROCEDURES

We use the BLM Mineral Laboratory at Folsom, California for a variety of laboratory examinations. For purposes of this paper only a brief description of sampling and sample processing for small gold deposits will be given. However, we regard sampling and related procedures as of critical importance, as errors can result through selection of sample sites, methods of sampling, amount of sample taken, sample preparation, and assay procedures used.

Sampling and Sample Preparation for Small Gold Deposits:

Lode:

- From the discovery and adjacent areas, cut a channel or continuous chip for minimum mining width generally 3-4 feet; usually 2 lbs. per foot of sample for fire assay at one fire assay ton.

- Put samples in plastic or plastic lined bags and then into canvas bags, labeled inside and out. Then place into large, heavy-duty plastic bags for protection from the elements.

- Crush and grind to - 20 mesh, then split into 4 parts. Send 2 samples for fire assay, retain 2 splits for record.

Placer:

Wells (1968) has described placer examinations including field and laboratory procedures. Placer gold sampling, sample processing, and evaluation of results are described in a report by Evans (1983).

The following summary is taken from these papers.

- Claimant should expose his best ground for sampling.

- As near as possible, sample processing should reflect the mining methods the miner is using, or going to use.

- Samples should be collected and if necessary stored carefully in plastic buckets.

- Generally, an examiner should take more than one sample.

- Fire assays are not acceptable for evaluation of placer samples, because the intent is to look for recoverable rather than total gold content.

- Generally, we will utilize a miner's own dredge to sample. Examiner should be stationed at the dredge during sampling operations.

- A statistically accurate analysis of a placer sample is difficult. A placer sample should never be split. An examiner should look at and consider the whole operation. Early information from the claimant is helpful and beneficial.

- We will accept as evidence sales receipts from legitimate purchasers (but not IRS records) for sale of gold and black sands.

- If claimant indicates that platinum or other minerals are present in heavy mineral concentrate, we will test for it. Platinum group metals can be assayed at Bureau of Mines laboratory in Reno.

- We will consider historical data about an area.

- For assay work, we use several labs, including the Bureau of Mines.

It is important to keep accurate, complete, systematic, and signed records in sampling and processing gold deposits. The adequacy of records will reflect on the quality and legality of the mineral examination, and the mineral examiner. Data will be no better than the methods used and the records kept. Our function is to certify discovery. However, our procedures can be used to determine reserves on a gold property, provided there are proper samples in sufficient number to block out ground by grade and cubic yards, or tons.

MINERAL REPORTS

A good mineral report is the written and graphic presentation of findings made during a field examination of a mineral property and serves the purpose for which it was prepared. It includes observations, illustrations, testing results, interpretations, and conclusions in regard to the property. They must be complete and accurate, prepared in a clear and concise manner, and appropriate in tone. The mineral report should represent a culmination of the examiner's previous training and experience. Unless the report is a good one and conveys to others the impression of competency, the conclusion will not mean much. Thought and care must be given to a mineral report, to see that it meets accepted professional standards.

The following outline covers much of what we include in our Mineral Reports for validity and patent determinations involving mining claims.

COLORED TITLE PAGE

MINERAL REPORT TITLE PAGE (BLM Form 3060-1, 7/84)

CONTENTS

ILLUSTRATIONS (Listings)

ATTACHMENTS

SUMMARY

CONCLUSIONS AND RECOMMENDATIONS (1 or 2 pages)

INTRODUCTION

- General
- Purpose and Scope Scope of Report (including date case assigned)
- Dates and Scope of Field and Laboratory Examinations
- Dates and Scope of Conferences with Claimant

LAND STATUS AND RECORD DATA

Appropriate documents such as location notices, proofs of labor, Notice of Intent to Patent, encumbrances, right-of-way, and so forth. Make a table showing document listings and date of final action (or status as of date of report).

PHYSICAL FEATURES AND SURFACE IMPROVEMENTS

Location, Accessibility, and Physiography
Climate and Vegetation
Surface Improvements
Water and Power Facilities

GENERAL GEOLOGY AND MINING HISTORY

Brief Description of "regional" geology, and mining history of the area or district.

GEOLOGY, MINERALIZATION, AND MINE WORKINGS AT SITE

Describe and interpret site geology, structure, and mineralization in conjunction with mine workings if applicable. Emphasize valuable minerals analyses and their relations to structure. Give field description of mine works and improvements. Describe and interpret sampling practice, data, and volume of influence of samples. Give all laboratory results. Have appropriate claim, topographic, mine works and geologic maps. Show sketches and cross sections.

MINING, MILLING, PROCESSING, AND PRODUCTION

Describe all operations and give record of production. Show appropriate flow sheets, sketches, and tables.

ECONOMIC EVALUATION AND MARKETING

General
Procedures and Results
Marketing and Utilization
Economic Evaluation
Tonnage factors; determination of tons and grade. Determination of all costs and taxes. Economic evaluation method used including discount rate. Mineral in character and 10-acre rule for placers. Cite all sources of economic data. Describe profitability. Show all tables, sketches, and calculations.

REFERENCES CITED

Use Geological Survey citation methods.

COST FACTORS INFLUENCING DISCOVERY

The types of gold deposits (mines) are numerous and can be differentiated into a number of models. An array of economic models can be applied to each deposit model. Changing economic conditions, especially large daily fluctuations in the gold price, or longer forecasts as reflected in futures or forward contracts, tend to place a higher degree of risk on the possibilities of a viable operation on marginal small gold deposits than can be expected for larger gold operations.

How then can a small gold deposit (mine) be evaluated? First "small" must be defined. This is not an easy task. Is it less than a 5 person operation; less than 50 tons per day; or less than 500 cubic yards per day? For the purposes of this paper we are relating small operations (miner) to those employing 5 persons or less. This reflects a minimum mining staff of a drilling/mucking crew, processing and surface operations staff, and general supervisor personnel, all skilled in their craft.

It should be noted that whether the operation is small or large, the discovery requirements are the same. Technical and economic factors used to evaluate small mining operations are essentially the same as for large operations. However, the degree of, and fluctuations in variables affect smaller operations to a greater extent than the more stable larger operations.

Some of the general variables which are applied as cost factors against the value of gold include exploration, mining, production, processing, refining, environmental, and reclamation costs. Specific variables include wages, investment and operating capital, taxes, grade, geologic environment, mineralogic character, and so forth.

Financing Factors

In many cases, the opportunities for creative financing schemes are not available to the small gold operator if significant investment and initial operating capital is required. An analysis of the locators financial situation may show higher costs involved in servicing loans of short term than would be expected from larger operations servicing longer term loans. This cost may push overall cost above the threshold of a positive cash flow for the mine.

Sampling Procedure Factors

Proper sampling and sample processing are critical to developing the right recovery process. It is important to obtain all information as to size distribution, grade, gangue, interfering minerals, hardness, roundness, and clay or impurity content, to name a few. Also, detailed field descriptions of the deposit and surrounding area will influence recovery operations and the economics of the deposit (see Case Histories section). Critical information include measurement of the gold bearing material and overburden; strike and dip of vein, structures and surrounding rock;

mapping of important rock units; problems with reclamation; which may include identification of stockpiles or waste disposal areas, access, power and water availability; weather conditions; and land ownership patterns.

The mineral examiner cannot expect to make a decision to mine a deposit based on the results of data on quality and quantity of material if such data are of less precision or accuracy than one would expect from industry standards. For example, a one dimensional sampling pattern along the exposure of a vein or structure cannot provide ore grade results to depth below the area of influence of the surface samples. A prudent decision to invest time and/or money in the project with the expectation of a return on that time and/or money could not be made. Drilling, trenching or subsurface development would be needed to assess the quality and quantity of the deposit, thereby allowing for a three dimensional measurement of the mineral. In the previous example, a discovery may not have been made unless the value of the near surface material was great enough to stand on its own.

An over or under estimation of the gold value of a placer deposit can occur if the sample volume is small. It is especially evident if the gold size to be recovered is large and the distribution in the gravel is small. This "nugget" effect must be compensated for by adequate sample size, whether it is in terms of volume as in a river terrace deposit, or time as in dredging a stream channel. What is important is that throughput of sample material in the sample recovery circuit be sufficient to minimize the nugget effect. Although this effect can be very noticeable in a placer gold deposit, its affect also can occur in vein or disseminated deposits.

It is also important that the sample size be sufficient to minimize the effect of random distribution of gold particles within a placer deposit. For example, there are approximately 270 12 inch pans per cubic yard of dry loose gravel weighing 1.35 tons per cubic yard (determined by the authors in the Folsom Laboratory). Consider a deposit sampled by taking four 12 inch pans from the face. A variance of one 40 milligram piece of gold in the medium size range (approximately 2mm) may over or under evaluate the deposit by about $28 per cubic yard (gold at $360 per troy oz.;$0.01 per mg.). For a one-half cubic yard sample of the same deposit (135 pans), a one-piece variance would represent an over or under evaluation of $0.83 per cubic yard; a one cubic yard (270 pans) would be represented by $0.42 per cubic yard. This illustrates that sample size does have a direct affect on the gold value assigned to the sample. In addition, larger samples lessen the effect of random and low particle distribution in the sample through taking more of the deposit. About 100 pounds per linear foot of thickness and about one-half or more cubic yard of material has worked well for the authors in sampling this type of deposit (provided the samples are properly spaced).

In addition to the nugget effect, a problem with quality control in sampling occurs because of a more uneven distribution of gold value in the rock host material. Here, adequate sample size and sample distribution are a hand-in-hand requisite to a representative evaluation of the deposit. Extreme examples of vein type distribution are seen in pocket

lodes and disseminated vein type deposits. Sampling of these type deposits should be tailored to reflect the model identified for the type deposit encountered. Many deposits may require closely spaced samples. Fewer samples along the vein or deposit will be needed if the values are consistent in the deposit.

Sampling Analysis Factors

Critical in the analysis of the quality and quantity requirements for the prudent person test is the measurement and sampling of the deposit. As in larger operations, tons and grade of each deposit must be known in order to assess the potential for development. Assuming that a prudent person is also an investor (their time and money), it is unlikely that they will expend any of their resources to develop a mine without a good knowledge of the character of the deposit. Criteria by field measurement and sampling of the deposit can be developed by tailoring procedures and precision of sampling and analysis to a knowledge of the gold depositional and mining/processing models.

In the analysis of lode samples, sample size also has an important affect on ore grade. The following table (Broadhead, 1984) shows the relationship between ore grade, sample size required and screen mesh of the sample to achieve a predetermined accuracy of sampling. This inherent sampling error is in addition to errors of the fire assay-ICP procedures. Since in a proper fire assay these are usually small in comparison to the intrinsic sampling error, they can be ignored in ore grade material. For very small samples or for very low grades of ore, the various analytical errors predominate and the tables are only approximate. This table was calculated from P.M. Gy's work (1981) on ore sampling and assumed a particle size up to the mesh size. Consequently, for a "Carlin" type ultra fine gold ore these values overestimate the sample size required. Gy, in his work, also had to make many other simplifying assumptions which don't occur in the real world, so the values should be considered only intelligent estimates.

	Accuracy	Sample size, in grams required for:			
Grade	required	-70 mesh	-100 mesh	-140 mesh	-200 mesh
0.1 oz/T	67%	18.5	6.6	2.4	.8
	90%	207.0	74.0	26.0	9.3
	95%	820.0	293.0	107.0	37.0
0.05 oz/T	67%	37.0	13.2	4.8	1.7
	90%	409.0	146.0	53.0	18.0
	95%	1638.0	585.0	213.0	73.0
0.01 oz/T	67%	185.0	66.0	24.0	8.3
	90%	2047.0	731.0	267.0	91.0
	95%	8193.0	2926.0	1067.0	366.0
0.005 oz/T	67%	370.0	132.0	48.0	17.0
	90%	4096.0	1463.0	533.0	183.0
	95%	16383.0	5851.0	2134.0	731.0

P.S. This table was constructed to remined you of the errors one can expect in a randomly mixed ore. The sample size we (Bureau of Mines) can handle is normally fixed at 1-assay ton (29.167 grams).

Care must be exercised when analyzing placer concentrates. Commonly, individuals will apply fire assay, less commonly AA/ICP methods, to analyze their concentrates for deposit value. Because of the nature of the size distribution of particles within the deposit (fine to coarse range), the nugget effect plays an even greater role in the over or under evaluation of the deposit. In addition, when utilizing fire assay, an over evaluation occurs because recovered free gold does not include gold combined to other minerals not and recoverable by amalgamation such as sulfides (pyrites), or gold in magnetite. The choice preferred for analysis of placer samples is amalgamation of the whole concentrate after course and medium gold removal, since this procedure best reflects the gravity recovery methods of free gold commonly used in placer operations. After amalgamation, fire assay of concentrates to determine gold tied to other minerals could be used. If high gold values are found in the concentrate, then hydrometalugical methods may be used to win those values.

Care should also be exercised to avoid the nugget effect in the analytical procedures when analyzing samples, especially lode samples. For example, the choice of most mineral examiners is a fire assay when analyzing lode samples from small gold mines. However, some individuals will apply atomic absorption (AA) or induced coupled plasma (ICP) methods when assaying the total sample. In a one-ton fire assay, 29 grams of sample material are used in the analytical procedure. For AA/ICP methods, from 6 to 10 grams of sample are used, or one third to one fifth as much as used in a fire assay. Therefore, errors due to the nugget effect can be magnified from 3 to 5 times when using AA/ICP method over fire assay. For each milligram variance in a one-ton fire assay, an under or over evaluation of one ounce per ton may be realized. This same variance in the smaller AA/ICP sample would be magnified 3 to 5 times, for an over or under evaluation of 3 to 5 ounces per ton.

Mineral Processing Factors

Although adequate volume control and average grade distribution has been obtained, it is necessary in many cases to further evaluate the material in order to develop the best processes of recovery for the type deposit. Material that contains free gold may need a crushing - grinding - gravity recovery circuit. If the gold is finely disseminated within the rock matrix, a leach system may be required. In many cases, an interfering mineral may increase processing and/or treatment costs above the break even point. When this occurs, absent an alternative method, the realization of discovery no longer exists. Some sampling programs may require a bulk heap leach pilot plant in order to accurately assess the full potential and adequacy of a material processing scheme.

Industry practice should be used to develop a sampling program that best reflects the true picture of the deposit. After obtaining a better knowledge of the deposit, the prudent person will know if they should

invest time and/or money in the project. It is our practice to obtain all the geologic information possible prior to sampling, and to follow industry practice in sampling and analysis insofar as possible.

Remember that the mining claim boundaries must encompass the discovery and that they be accurate with respect to critical discovery points. Deposits within the claim boundaries but supported by a discovery outside the claim will not support that location (Ranchers Exploration & Development Co. v. Anaconda Co., 248 F Supp. 708 (DC Utah 1965)). For as we have already discussed, conditions may indicate that the claim is mineral in character, however, without a discovery within the boundaries of the claim, it is not a valid location. In some cases surveys utilizing tape and compass, EDM or telemetric methods may be needed to position the deposit extent, improvements, or property lines in their proper perspective.

CASE HISTORIES

Lode Gold Mine

The following abridged case history concerns the Ex Cramer lode gold mine in Amador County, California. While much of the report is not shown there is enough information to show our approach to reaching a decision on the discovery of a valuable (gold) deposit.

Dimensions of the quartz vein used for the discovery in this case are of note. The vein length for the discovery is 51.5 feet, even though the known length of the vein is about 130 feet. Average vein thickness was 3.1 feet, less than a normal 4 feet used for most mining widths in adits, raises, winzes, and drifts. The claimant hand graded material underground before sending it through his processing circuit. That is, he removed the wall rock from the vein material, and does it rapidly. For his small operation we though it feasible to hand grade. Therefore, we accepted the 3.1 foot width.

Ramm, the claimant, indicated that this portion of the vein was his best block based on his mill run tests and averaged 0.5 ounce of gold per ton. He wished us to test this area, which we did. In this case, the small size of material blocked out was adequate to support the claimants discovery. Critical to this determination is that the claimant owned, without liens, all equipment necessary to mine, process, and refine his material. If capital was needed to purchase equipment, the cost may have exceeded the value of the gold vein in the identified block. In this case, more of the vein structure would have had to be sampled and "certified" in order to provide the quality and quantity needed to support the discovery of a valuable mineral (gold) deposit.

Form 3980-1
(September 1970)
(formerly 3820-1)

Serial Number
CA-13142

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

State CALIFORNIA

MINERAL REPORT

MINERAL PATENT DETERMINATION FOR THE EX CRAMER LODE GOLD DEPOSIT, COMPRISING THE EX CRAMER LODE MINING CLAIM

Owned by

Paul L., and Judith A. Ramm

(Title)

LANDS INVOLVED

Amador County, California
Mount Diablo Base, and Meridian
T. 6 N., R. 12 E.,
within the S½ NW¼ Section 9,
as shown on Mineral Survey No. 6891,
less conflicts, containing 8.823 acres

June 20, 1983

(Date)

By

J. R. Evans, Mining Engineer (RG 431; CEG 958), and R. M. Waiwood, Geologist

Technical Review

7-7-83

Management Review

JUL 12 1983

* U.S. Government Printing Office: 1973—784-256/2152 Region 8

39

SUMMARY

The Ex Cramer gold lode claim is near Pine Grove, Amador County, California in the west central Sierra Nevada at an elevation of about 2,000 feet. A Notice of Intent to Patent the claim (CA-13142) was filed with the Bureau of Land Management (BLM) on September 21, 1982, and an amended Notice November 16, 1982, by Paul L. and Judith A. Ramm.

All of the claim is underlain by soil-mantled phyllite and metasiltstone of the Paleozoic Calaveras Formation. The formation is cut by shear zones containing quartz stringers, pods, and veins as much as 12 feet thick. Locally, the quartz contains oxidized sulfide minerals and free gold, Quartz areas have been explored through pits, trenches, and underground works.

The discovery was within 52 feet west of the No. 9 shaft, in, and adjacent to the 65-foot level. Sulfide minerals and free gold were observed in the quartz vein in the discovery area. Geologic mapping and sampling results by fire assay showed a block of quartz that was 3.10 feet in average thickness for a linear distance of 51.5 feet, and contained a weighted average of 0.53 troy ounces of gold per ton. Our calculations showed that the block weighed 383 tons. The price of gold on June 20, 1983, was $416 (Handy and Harmon), resulting in a gross value of $85,000 for the block. Mining, milling and processing costs are figured at $50 per ton, or $19,000 total for the block. Tax related factors are figured to be about 15% of the gross value of the quartz block or about $13,000.

All necessary mining, milling and processing equipment is owned out-right by Ramm. Water is available for the mine and mill. Commercial electricity, as well as power from diesel-fired generators is available for the operation.

CONCLUSIONS AND RECOMMENDATIONS

The Ramm's have filed all necessary documents, certificates, and statements, and have performed more than $500 worth of improvements on the Ex Cramer lode claim. All mineral survey monuments were located and verified as correct. Also, the Ramm's had posted their Notice of Intent to Patent and their Mineral Survey in a conspicuous place on the hoist house.

An economic analysis of the quantity and quality of in-place gold-bearing quartz in the discovery area, mining, milling, and processing costs, and the price of gold on June 20, 1983, show that the "prudent man" and "marketability" requirements of Federal mining law have been met. Therefore, a valid discovery of a valuable gold deposit on the Ex Cramer lode claim has been made and we recommend clear-listing for patent.

INTRODUCTION

A field examination of the Ex Cramer gold lode mine near Pine Grove, Amador County, was made by J. R. Evans, R. M. Waiwood, and M. J. Horne, April 29-30, 1983. The examination was undertaken in order to make a determination regarding Mineral Patent Application CA-13142, filed September 21, 1982, in the California State Office (CSO), Bureau of Land Management (BLM), by Paul L. and Judith A. Ramm, Post Office Box 19, Jackson, California 95642, (209 296-7241). An amended Mineral Patent Application was filed by the Ramm's on November 16, 1982, (Attachment II-1).

Paul L. Ramm met the BLM staff on his claim about 9:30 AM, April 11, 1983, and accompanied them through their surface and underground examinations and mapping program. He also was present during sampling of the underground works and approved or selected the sample sites. Ramm was also present April 29-30 when Evans returned to complete mapping of the underground works. In fact, Ramm assisted with this mapping by holding the measuring tape. During the examinations Ramm was very cooperative, showing the BLM staff all mine workings, mineral occurrences, and mining, milling, beneficiating, and recovery operations on the Ex Cramer lode claim.

Access to the Ex Cramer lode claim is by good paved roads, and about one half mile of good, but narrow, graded dirt roads. The claim can be reached by a pickup truck with high clearance.

It was cold and cloudy during the field examination with rain and hail showers. The weather, however aggravating, did not cause any major problems with the field examination.

40

LAND STATUS AND RECORD DATA

The Ex Cramer lode claim was received and recorded with the BLM pursuant to 43 CFR 3833 on September 10, 1979. Case file number CAMC-34503 was assigned to the claim by the BLM.

A search of this case file indicates that the subject mining claim was located on unappropriated public land on March 27, 1963, by Nick Continni. Other actions pertaining to the Ex Cramer lode claim arerecorded in the following summary. Data for the summary was obtained from case file (CAMC-34503) and patent case file CA-13142.

		Amador County Recorder Records	
Action	Date of Action	Book	Page
Notice of Location (NOL)	3/27/63	12	287
Amended NOL	10/01/65	12	375
Amended NOL	7/08/76	292	187
Quit Claim Deed	5/17/77	307	543
Amended NOL	10/14/81	402	10
Notice of Intent to Patent	9/21/82		BLM CA-13142 *
Notice of Intent to Patent (Amended)	11/16/82		BLM CA-13142 *

*(See Attachment II-1)

The chain of title to the original Ex Cramer claim has been verified by First American Title Insurance Company (August 19, 1981) and by the Office of the Solicitor, Department of the Interior, (Memorandum dated November 29, 1982, (Attachment II-2). No adverse claims were received by the BLM during publication of the Notice of Intent to Patent (43 CFR 3862.4) the Ex Cramer lode claim in the Amador Dispatch (publication period December 15, 1982, to February 9, 1983). A notice was also posted on the bulletin board in the public room of the BLM, 2800 Cottage Way, Federal Building, Sacramento, California 95825, from December 8, 1982, to March 4, 1983. Requirements of the regulations at 43 CFR 3861 and 3862 were met by Paul Ramm for patent of the Ex Cramer claim, and subsequently, Final Certificate of Mineral Entry was issued March 2, 1983, (Attachment II-3).

A Mineral Survey was conducted by Gilbert A. Gardener during September 1, 1981, to April 8, 1982. The Certificate of Expenditures, Improvements and Survey, signed July 13, 1982 (Attachment II-4), shows that the claimant has complied with the requirement that not less than $500 worth of labor has been expended for improvements upon, or for the benefit of, the Ex Cramer lode claim. The field notes of the mineral survey were approved by the BLM, Branch of Cadastral Survey, California State Office, on July 13, 1982, and the plat of the mineral survey of the Ex Cramer lode claim was assigned Mineral Survey No. 6891 (Attachment I-5 and II-4).

During the field examination, all mineral survey monuments and claim corners were found and verified by Brunton compass and pace methods. This was done in order to determine the relation of the mine workings to the claim boundaries. All monuments were found to be intact, and as described in Mineral Survey No. 6891 Field Notes (Attachment II-4). It was also verified that the claimant had posted, in a conspicuous location on the hoist house, a Notice of Intent (NOI) to Apply For Mineral Patent (amended) and a copy of Mineral Survey No. 6891.

The Ex Cramer claim contains 11.019 acres, of which 2.196 acres are in conflict with Curative Script Patent No. 846 (issued August 15, 1874) in the SW¼ of the NW¼ of Section 9 (Attachment I-5 and II-4). After conflicts, there remains 8.823 acres to be considered for Mineral Patent.

PHYSICAL FEATURES

The Ex Cramer gold lode claim is in the western foothill region of the Sierra Nevada, and underlain by low rolling hills and valleys. Most of the claim is in a valley formed by the intersection of two intermittent tributaries of Jackson Creek (Attachment I-2), about two miles south of the community of Pine Grove. Elevation of the claim is from 2160 feet at the western boundary to 2270 feet at the southeast corner of the claim.

The climate in the area is mild, with most of the precipitation as rain during the winter months (average precipitation is estimated to be 35 inches per year). Summers are hot and dry, with temperatures as high as 100°F or more.

Stands of pine and fir occur on the claim, and on the slopes of the ravine, thick patches of manzanita and mountain oak are common. Poison oak is common along the drainage channels. Rock outcrops do occur but most of the claim area is mantled by a reddish-brown, clayey soil. The dirt access road into the mining claim is well maintained, and from 12-15 feet wide.

GENERAL GEOLOGY AND MINING HISTORY OF THE PINE GROVE (IRISHTOWN AND CLINTON AREAS) GOLD DISTRICT

Accordinig to Clark, the Ex Cramer lode gold mine is in the Pine Grove (Irishtown and Clinton areas) Gold District in the west-central Sierra Nevada (1970, p. 105). The district is underlain by a northwesterly trending belt of metasedimentary rocks, predominately slate, phyllite and schist of the Paleozoic Calaveras Formation. Intrusions of Mesozoic granitic rocks occur within the district and are probably the source of the gold-bearing quartz veins (Wagner, and others, 1981, Sheet VI).

The Pine Grove Gold District is within the east gold belt, a northwest trending belt of gold-quartz veins about 10 miles east of the classic Mother Lode belt (Turner, 1894). The east gold belt generally consists of narrower but richer gold-quartz veins (Carlson and Clark, 1954, p. 165).

Mining in the Pine Grove Gold District began with the working of the auriferous gravels and soils along the channel and tributaries of Jackson Creek, probably in the late 1850's. Further work was on the rich but small ore shoots in narrow quartz veins which became characteristic of the east gold belt. The shoots contained free gold and gold-bearing pyrite, galena, and chalcopyrite (Clark, 1970, p. 105 and Carlson and Clark, 1954, p. 166). Prospecting and development work since the last century has been intermittent (Clark, 1970, p. 105).

A few of the mines that have operated in the Pine Grove Gold District are: Black Wonder, Contini, Mikado, Peterson, Pine Grove Unit, Rainbow, and Red Hill. Production statistics for the district are not known.

It is clear from the description of the Contini mine by Carlson and Clark (1954, p. 177-178), that part of the old Contini mine is now part or all of the Ex Cramer lode claim. The Contini mine consisted of 2 unpatented claims; IXL and the Three Horsemen. A picture in Clark (1970, p. 106) cited as of the Contini mine is clearly of the present No. 9 shaft of the Ex Cramer lode claim. The following tabulation shows some of the stages, and production that have apparently occurred from the Contini and Ex Cramer lode gold mine.

Period	Action
1889-1890	Claim worked in conjunction with the Wheeling Mine (1 mile east). Production unknown.
1932	Claims were relocated by Nick Contini.
1935-1939	Intermittent production, about $6,000.
1950-1952	Small amount of ore produced. Twenty tons of ore shipped to Pine Grove for milling.

Period	Action
1958-1963	Claim relocated as the Ex Cramer lode.
1980-1982	10 tons of ore mined with 5 oz. of free gold recovered (Attachment II-5).

GEOLOGY, MINERALIZATION, AND MINE WORKINGS ON THE EX CRAMER LODE GOLD MINING CLAIM

Most of the Ex Cramer lode claim is underlain by soil-mantled greenish gray phyllite and metasiltstone of the Paleozoic Calaveras Formation (Attachment I-6). Attitudes in the phyllite are difficult to obtain because of alluvium, soil, slope wash, and its weathered nature. Where attitudes were obtained underground, foliation parallels bedding. Based on the observation that most of the veins on the claim, generally parallel foliation, it appears that the foliation trends generally north-northeastin the west part of the claim and becomes more easterly in the east part of the claim. Dips of foliation are mostly to the south, and from about 55° to 90°. Based on hand lens examination in the field, the phyllite appears to be composed largely of quartz, feldspar, and chlorite. Meta- siltstone is composed mainly of quartz and feldspar with some dark minerals.

A number of prominent shear zones cut the Calaveras Formation and several of these zones contain mineralized quartz veins from a fraction of an inch to as much as 12 feet thick (Attachments I-6, I-7, and I-8). Locally, the veins contain pyrite, chalcopyrite, sphalerite and free gold. Most of the observed mineralization is confined to veins and wall rock alteration and mineralization appears negligible.

The northeast part of the claim which was underlain by slope wash was placer mined by hydraulic guns in the last century. Stacks of boulders, cobbles, and pebbles are along stream courses and in local piles in the area marked "t" on Attachment I-6. Soil and weathered bedrock were also worked in the western part of the claim downslope from the old holding pond.

Mine workings have been numbered so as to conform as much as possible to the numbers given on Mineral Survey No. 6891 (Attachments I-5 and I-6). As the discovery area is between the No. 6 shaft and the No. 9 shaft, relations there will be discussed first. Thereafter, each numbered mine working will be discussed in general numerical order.

No. 6 and No. 9 Shafts, and the 65-Foot Level

The No. 6 shaft is for entry and connects the surface with the 65-foot level on the west, and the No. 9 shaft is for haulage and connects the level to the surface on the east (Attachments I-6, I-8, IV-6, and IV-7). The No. 9 shaft extends through the level to a total depth of about 115 feet from the ground surface.

Attachment I-8 shows that the development of the 65-foot level, and raise No. 1, stope No. 1, and crosscuts No. 1 and No. 2 are along a complex vein system that strikes east-northeast and dips from 40° to 80° south. Veins range in thickness from a fraction of an inch to 42 inches. Locally, within the veins, there are small patches and areas along sheeting that contain pyrite, chalcopyrite, sphalerite, and free gold. Sphalerite occurs in fine to coarse grains about 9 feet above the floor of the 65-foot level on the west wall of raise No. 1. Ramm reports that it also occurs at the bottom of No. 9 shaft. It probably occurs elsewhere, but is difficult to identify when fine grained and with chalcopyrite and pyrite. Sphalerite crystals are sometimes reddish in color, take an irresdescent tarnish, have a light brown streak, and prominent {011} cleavage. Sphalerite has not been reported previously from the Pine Grove Gold District. It was tentatively identified by J.R. Evans, and confirmed by J.J. Sjoberg at the Bureau of Mines Reno Research Laboratory, July 5, 1983. This vein system was once exposed on the ground surface and mined down several feet, but is now covered over by backfilling. Ground support is not needed, and the walk and back along the 65-foot level stand well.

Ramm indicated to us that his discovery was west of the No. 9 shaft to the stope No. 1 area. Accordingly, the authors of this report took 3 channel samples in the back of the 65-foot level, over a distance of 51.5 feet, and one channel sample in the floor of stope No. 1 (Attachment I-8). Samples were taken in sites pointed out by or approved by Paul L. Ramm. Free gold was observed at sample site ECL-1, ECL-2, and on the wall of stope No. 1, above the sample site of ECL-4. Sulfide minerals were present in all of the samples. Assay results from the samples and their significance in regard to a discovery are discussed in the Economic Evaluation and Marketing section of this report.

No. 1 Prospect

Originally, this prospect consisted of a cut 6 feet in diameter and 4 to 8 feet deep on a two-foot thick vein (Attachments II-4, and II-5). It has been backfilled with material from around the mill. The cut was on the same vein exposed in the 65-foot level, but about 45 feet above the area just west of crosscut No. 2 (Attachments I-6 and I-8).

No. 2 Shaft and No. 12 Shaft

The No. 2 shaft is about 6 feet by 10 feet and sunk 70° southeast on a two-foot thick oxidized quartz vein to a depth of at least 100 feet. The vein trends N 40° E and extends northeast into No. 3 and No. 4 open cuts, a distance of about 170 feet. A circular shaft about 6 feet in diameter is here called the No. 12 shaft. It is about 19 feet southeast of the No. 2 shaft, vertical, and probably intersects the No. 2 shaft at about 40 feet of depth. There was no vein visible in the shaft (Attachment I-6). Neither of these two shafts were entered as they were deemed by us to be unsafe.

No. 3, No. 4, No. 5, No. 13, and No. 15 Open Cuts

Geologic relations as exposed in these open cuts are shown on Attachments I-6 and I-7. Prominent intersecting shear zones contain fractured quartz veins that have nearly vertical dips and range in thickness from a fraction of an inch to as much as 12 feet. Veins locally contain oxidized sulfide minerals and at one locality, marked "x" in No. 3 open cut, flecks of free gold were observed on a fracture surface of the quartz vein. No mineralization was observed in the vein exposed in the No. 4, No. 5, and No. 13 open cuts, nor the six-foot deep No. 15 open cut.

No. 7 Shaft

This working is a four-foot by four-foot vertical shaft, about 15 feet, or more deep. It is sunk in a vertical shear zone that strikes N 5° E. A quartz vein about one foot thick is contained in the shear zone. No mineralization was observed in quartz vein debris adjacent to the shaft. The shaft was not entered as we thought it unsafe.

No. 8 Open Cut

The No. 8 open cut is about 10 feet wide, 22 feet long, and 5 feet in maximum depth at the face. It is driven along a west-northwest trending shear zone about 4 feet thick, containing two massive quartz veins from about 5 to 18 inches thick. No mineralization was observed.

No. 10 Prospect

A pit about 8 feet in diameter and 3 feet deep is here called the No. 10 Prospect. No quartz vein was evident in the pit but pieces of quartz vein were about the rim of the pit. No mineralization was observed in the pieces of quartz vein.

No. 11 Prospect

The No. 11 Prospect is a trench 20 feet long that strikes N 10° W, is 4 feet wide and 5 feet deep. No vein was observed, only weathered phyllite and soil.

No. 14 Prospect

A cut about four-foot by four-foot and 2 feet deep is labeled the No. 14 Prospect. A 6-inch quartz vein in a small northwest trending shear zone that dips 85° southwest is exposed in the cut. The vein contains pyrite, chalcopyrite, and flecks of free gold.

No. 16 Prospect

This prospect consists of a four-foot wide and twelve-foot long cut that trends N 25° W. At the face the cut is 4½ feet deep. A one to two-inch thick quartz vein is exposed in the cut. It trends N 50° W and is near vertical. Flecks of free gold were observed at one site along the vein. Oxidized pyrite and chalcopyrite were also observed.

The mining and milling methods used at the Ex Cramer lode gold mine are shown schematically on Attachment III-1. Photographs of the hoist house, shop, and mill are shown on Attachments IV-1 and IV-2. All equipment shown on Attachment III-1 is paid for and operative.

Sufficient water for the mill is available from three sources: 1) a storage pond, just north of the entry road near the hoist house, 2) overflow from the settling cone which goes back to the storage pond, and 3) two 1500 gallon storage tanks north of the house (Attachment I-6). The two tanks are filled by water pumped from the No. 9 shaft in a 2-inch plastic pipe (Attachment III-1). After filling a shut-off valve is thrown. When water is needed at the mill, the water is sent by gravity down the same 2-inch plastic pipe as far as the No. 9 shaft where it is then directed by a join into another 2-inch plastic pipe and sent to the mill.

Power for the mine and mill is from 220v PG&E commercial lines, with standby power from a 10kv - 3 phase generator.

After mining and milling two types of concentrates are produced from the Denum Table, a high grade and a low grade (Attachment III-1). The high grade concentrate is treated differently than is the low grade concentrate, although both are first panned to recover free gold. Ramm does not use mercury in the pan, and told us that for some reason the gold would not amalgamate.

The low grade concentrate consists mostly of sulfide minerals after panning, and is leached with CLS solution purchased from Action Mining Company, Trona, California. Composition of the CLS solution is not given out by Action Mining Company. Material for the solution is purchased as solid granules and dissolved in water at 8 ounces to the gallon. Concentrate is leached for 12 hours at 160°F. Ramm reports that he then precipitates a sludge by addition of zinc shavings to the solution. The sludge contains any gold, along with silver and copper, and is dried to a final product which Ramm indicates he can sell.

High grade concentrate also consists mostly of sulfide minerals after panning. This concentrate is mixed into a graphite crucible with a 3-1 ratio of letharge and fluxes. Typically, Ramm has mixed 6 ounces of concentrate with a total of 18 ounces of letharge, sodium carbonate, silica, and borax. The charge is heated in an oil-fired furnace to boiling, about 2500°F. After boiling, the charge is poured into a cast iron mold with six conical containers of six ounce capacity each. Each container is coated with talc. After cooling, the slag is chipped away, leaving a metal button composed of any contained gold, silver, and lead. Ramm indicates that this product is also marketable.

As of the date of this report, none of the processed sulfide concentrates have been sold. Ramm is unsure of the ratio of free gold to gold contained in the sulfide concentrates. He indicates, and we concur based on our observations, that most of the gold in the deposit is free-milling and can be panned from the concentrates.

Total production from the mine is not known. Information that was available to us is presented in the last paragraph of the section on General Geology and Mining History of the Pine Grove (Irishtown and Clinton Areas) Gold District.

According to Ramm, the ten tons of material milled in his new mill gave about five troy ounces of free milling gold (Attachment II-5). There were about 70 pounds of high and low grade concentrates per ton produced. Both the sludge and buttons developed from these concentrates has not been sold.

As previously mentioned, the discovery area is west of the No. 9 shaft, adjacent to the 65-foot level for a distance of 51.5 feet. In order to test this area for the discovery of a valuable gold deposit, four samples were taken for fire assay. Results from the samples supplemented the geologic data presented on Attachment I-8.

Samples were collected, as they were cut, in a large heavy plastic bag held by two men. Next they were transferred to zip-lock plastic bags, tagged, then placed in tagged canvas bags. Finally, the samples were placed in a clean heavy plastic bag for transportation to the Mineral Laboratory at Folsom, California. At the laboratory the samples were crushed, ground and split into four equal parts by J. R. Evans. Two parts for each sample were sent in for separate full ton fire assay. Descriptive sample data and assay results in troy ounces per ton (henceforth called oz./ton) are given below (Attachment I-8).

Sample ECL-1: A continuous chip sample, 41 inches long, weighed 5 pounds, and was taken across the vein in the back of the 65-foot level, 6½-feet west of the west wall of the No. 9 shaft by single jack and point. Thickness of the vein is 41 inches. Sulfide minerals and flecks of free gold were visible along the sample site. Assay results for the two split parts are as follows: ECL-1_2 - 0.52 gold, 0.3 silver; ECL-1_3 - 0.51 gold, 0.1 silver (Attachment IV-8).

Sample ECL-2: A continuous chip sample, 30 inches long, weighed 5½ pounds, and was taken across the vein in the back of the 65-foot level, 23½ feet west of the west wall of the No. 9 shaft, by running the air drill across the vein. Thickness of the vein is 30 inches. Sulfide minerals and flecks of free gold were visible along the sample site. Assay results for the two split parts are as follows: ECL-2_1 - 0.98 gold, 0.2 silver; ECL-2_4, 0.86 gold, 0.1 silver (Attachment IV-9).

Sample ECL-3: A continuous ship sample, 42 inches long, weighed 3 pounds, and was taken across the vein in the back of the 65-foot level, 44½ feet west of the west wall of the No. 9 shaft, by single jack and point. Thick- ness of the vein is 42 inches. Sulfide minerals were visible among the sample site. Assay results for the two split parts are as follows: ECL-3_1 - 0.17 gold, 0.0 silver; ECL-3_2 - 0.30 gold, 0.5 silver (Attachment IV-10).

Sample ECL-4: A continuous chip sample, 37 inches long, weighed 4 pounds, and was taken across the floor of stope No. 1, 5½ feet directly above sample site ECL-3, by single jack and point. Thickness of the vein is 37 inches. Sulfide minerals were visible along the sample site, and flecks of free gold were visible on the west wall of stope No. 1, about 2 feet above the sample site. Assay results for the two split parts are as follows: ECL-4_3 - 0.20 gold, 0.0 silver; ECL-4_4 - 0.28 gold, 0.1 silver (Attachment IV-11).

Assays were done by Union Assay Office, Inc., P.O. Box 1528, Salt Lake City, Utah 84110, June 1, 1983. Hand sample serial number is 2850-2857 (Attachment III-2).

Our purpose here is not to block out mine reserves, but to see if there is sufficient quantity and quality of gold-bearing material to constitute a discovery of a valuable gold deposit or mine. Under the mining laws of the United States, a discovery is: "...where minerals have been found and the evidence is of such a nature that a person of ordinary prudence would be justified in the further expenditures of his labor and means, with a reasonable prospect of success, in developing a valuable mine...." Castle v. Womble, 19 LD 455 (1894). A valuable deposit or mine is one where the mineral (gold in this case) can be extracted and marketed at a profit; U.S. v. Coleman, 390 US 602 (1968).

With the above considerations in mind, certain analyses of the discovery were made. First a tabulation of average sample assay values for gold was made:

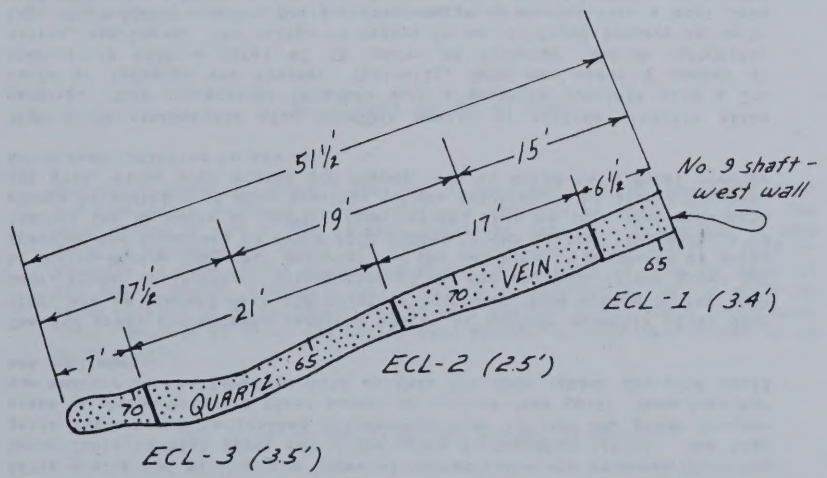
ECL-1_2 and 1_3 = 0.52 + 0.51 / 2 = 0.52 oz./ton

ECL-2_1 and 2_4 = 0.98 + 0.86 / 2 = 0.92 oz./ton

ECL-3_1 and 3_2 = 0.17 + 0.30 / 2 = 0.24 oz./ton

ECL-4_3 and 4_4 = 0.20 + 0.28 / 2 = 0.24 oz./ton

Next, the distance of sample influences along the 65-foot level was determined (see sketch below).



PLAN VIEW OF QUARTZ VEIN ON 65-FOOT LEVEL

Next, the weighted average vein thickness and ounces of gold per ton were figured.

Sample No.	(L) Length of Influence (ft.)	(W) Sample Width (ft.)	(L x W)	(O) Gold (oz./ton)	L x W x O
1	15.0	3.4	51.00	0.52	26.52
2	19.0	2.5	47.50	0.92	43.70
3	17.5	3.5	61.25	0.24	14.70
Totals	51.5		159.75		84.90

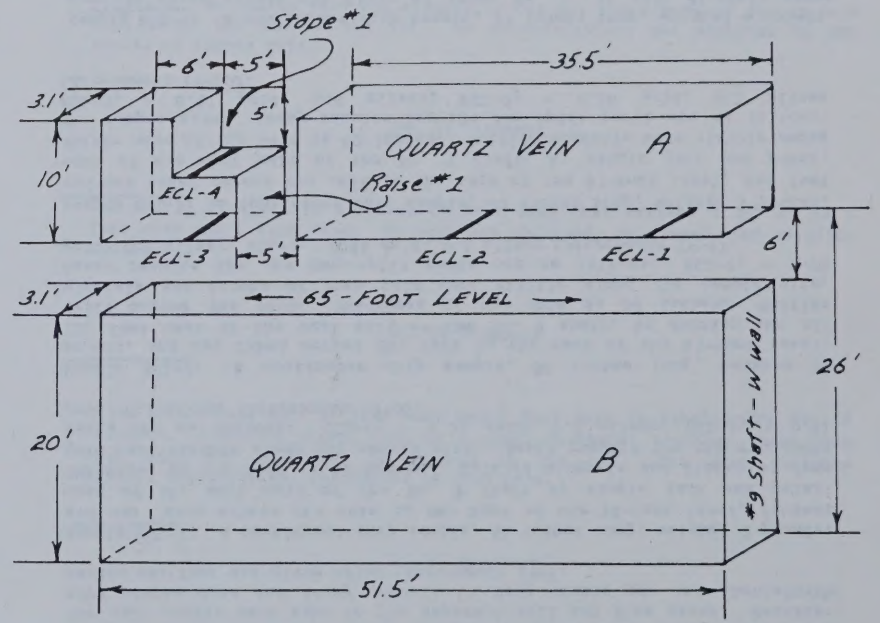
L x W x O / L x W = weighted average content of gold (oz./ton) and, 84.90 / 159.75 = 0.53 .oz./ton and,

L x W / L = weighted average width of vein in feet (ft.) and, 159.75 / 51.5 = 3.10 ft.

Based on the plan view study, the vein section is 51.5 ft. long, 3.10 ft. in average width with an average assay of 0.53 oz./ton of gold.

For this analysis, three feet is considered a minimum mining width and the 3.10 ft., determined here, is more than sufficient to meet the requirement.

Next, the volume of the vein was determined by using the data shown in the sketch below.



QUARTZ VEIN BLOCKS A & B - 65-Foot Level

Block "A" is 3.1 ft. x 10 ft. x 51.5 ft., and contains 1,597 ft.^{3} minus the volume of raise No. 1, and stope No. 1. The volume of raise No. 1 is 3.1 ft. x 5 ft. x 5 ft. or 77.5 ft.^{3} and for stope No. 1, 3.1 ft. x 5 ft. x 5 ft., or 77.5 ft.^{3}, for a total of 155 ft.^{3}. Therefore, the volume of Block A is 1,597 ft.^{3} - 155 ft.^{3}, or 1,442 ft.^{3}.

Block B is 3.1 ft. x 20 ft. x 51.5 ft., and contains 3,193 ft.^{3}.

In order to convert cubic feet to tons, it is necessary to know the weight per cubic foot of vein material. No laboratory tests were made, but based on the experience of J. R. Evans, the hard dense nature of the vein, and the presence of sulfide minerals locally, a weight figure of 165 pounds per cubic foot is reasonable.

Therefore, 2,000 pounds (lbs.) divided by 165 pounds per cubic foot (lbs./ft.^{3}) = 12.1 cubic feet per ton (12.1 ft.^{3}/ton), and 165 lbs./ft.^{3} divided by 2,000 lbs. equals 0.083 tons per cubic foot (0.083 tons/ft.^{3}).

In Block A there are 1,442 ft.^{3} divided by 12.1 ft.^{3}/ton, or about 119 tons of vein material. In Block B there are 3,193 ft.^{3} divided by 12.1 ft.^{3}/ton, or 264 tons. Total tons in both blocks is 119 + 264 or 383 tons.

The price of gold, according to the Handy and Harmon base price quote for 6-20-83, as given in the Wall Street Journal of 6-21-83, is $415.75 or $416 per troy ounce. Using this figure the gross value of Block A and B is 0.53 oz./ton x $416 x 383 tons, or $84,445, say $85,000. As gold has an existing world wide market the potential sale of gold mined from Block A and B is not questioned.

Several factors were used in considering the mining, milling and processing costs. These are:

1. Mining, milling, and processing equipment is owned outright and the capacity of the equipment is sufficient for the present operation of the mine.

2. All necessary buildings are in place and owned.

3. Water for mining and milling is readily available at negligible cost.

4. Power for mining, milling, and processing is readily available at nominal cost.

5. Supplies such as dynamite, caps, fuses, igniters and igniter cord, diesel fuel, chemicals and so forth, will be needed for the operation.

6. Periodically, equipment repairs will be necessary. All necessary tools for nearly all repairs are available in the shop.

7. Labor for Ramm and one helper (partner) is figured at $10 per hour, although Ramm has, and still can, operated the mine by himself. Two men could readily mine, mill, and process five tons in two eight-hour shifts.

8. Total costs are estimated at $25 per ton for mining and $25 per ton for milling and processing, giving a total cost figure of $50/ton x 383 tons or $19,150; say $19,000.

9. Taxes, depreciation, depletion, investment tax credit, salvage value of equipment, and other economic factors are of individual importance, but are here collectively estimated to account for about 15% of the gross value of Block A and B or about $13,000.

In our opinion the above analyses indicate that, under the mining laws of the United States, a discovery of a valuable gold deposit, or mine, has been made.

REFERENCES CITED

Carlson, D. W., and Clark, W. B., 1954, Mines and mineral resources of Amador County, California: California Journal of Mines and Geology, vol. 50, No. 1, p. 149-285.

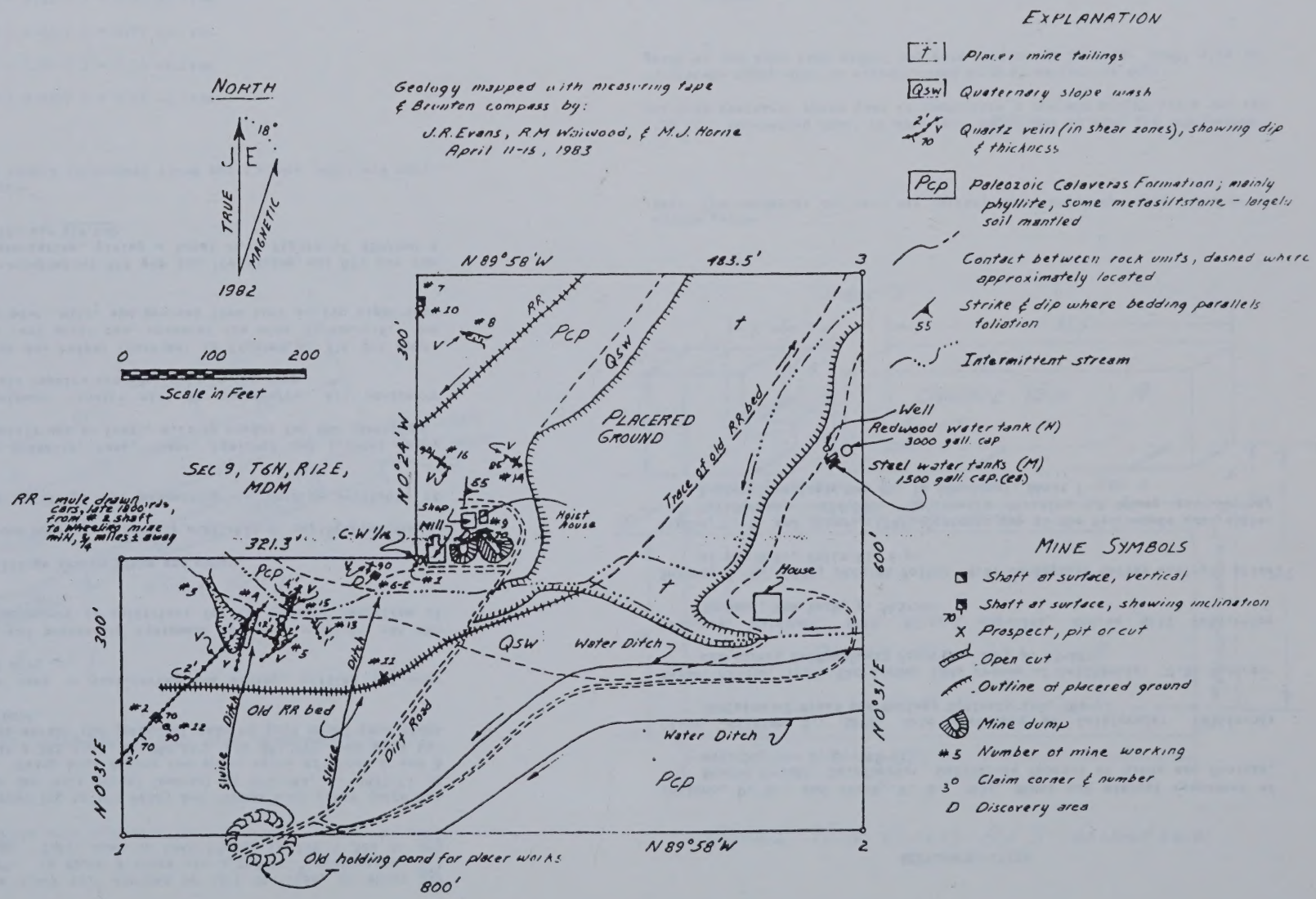
Clark, William B., 1970, Gold districts of California: California Division of Mines and Geology Bulletin 193, 186 p.

Knopf, Adolph, 1929, The mother lode system of California: U.S. Geological Survey Professional Paper No. 157, p. 45-48.

Lindgren, Waldemar, 1933, Mineral deposits, McGraw Hill Publishing Company, New York, p. 545-555.

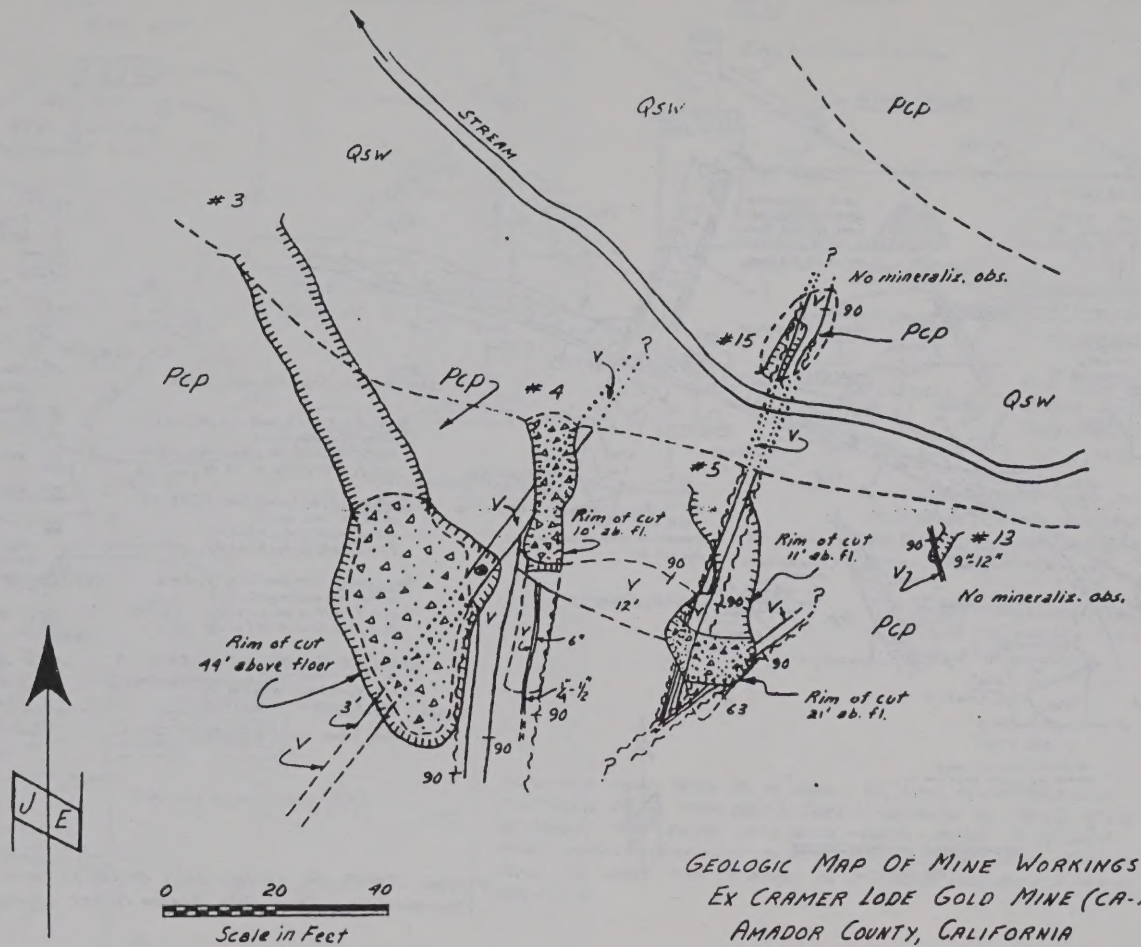
Turner, H. W., 1894, Jackson Folio: U.S. Geological Survey Geologic Atlas of the U.S., Folio 11, 6 p.

Wagner, D. L. and others, 1981, Geologic map of the Sacramento quadrangle, California, 1:250,000: California Division of Mines and Geology Regional Geologic Map No. IA (Geology), Sheet 1.



GEOLOGIC MAP OF THE EX CRAMER GOLD LODE MINING CLAIM (CA-13142), PINE GROVE AREA, AMADOR COUNTY, CALIFORNIA

I-6

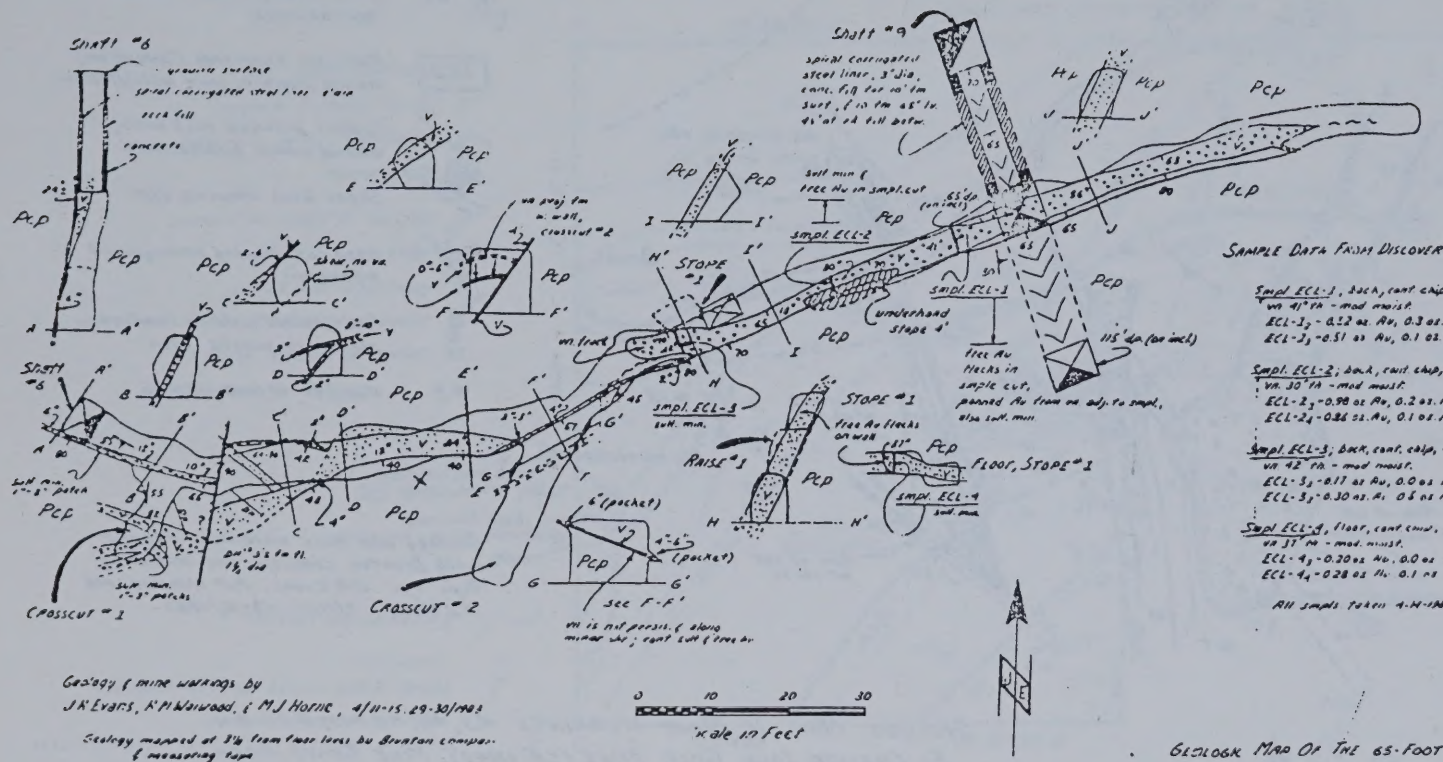


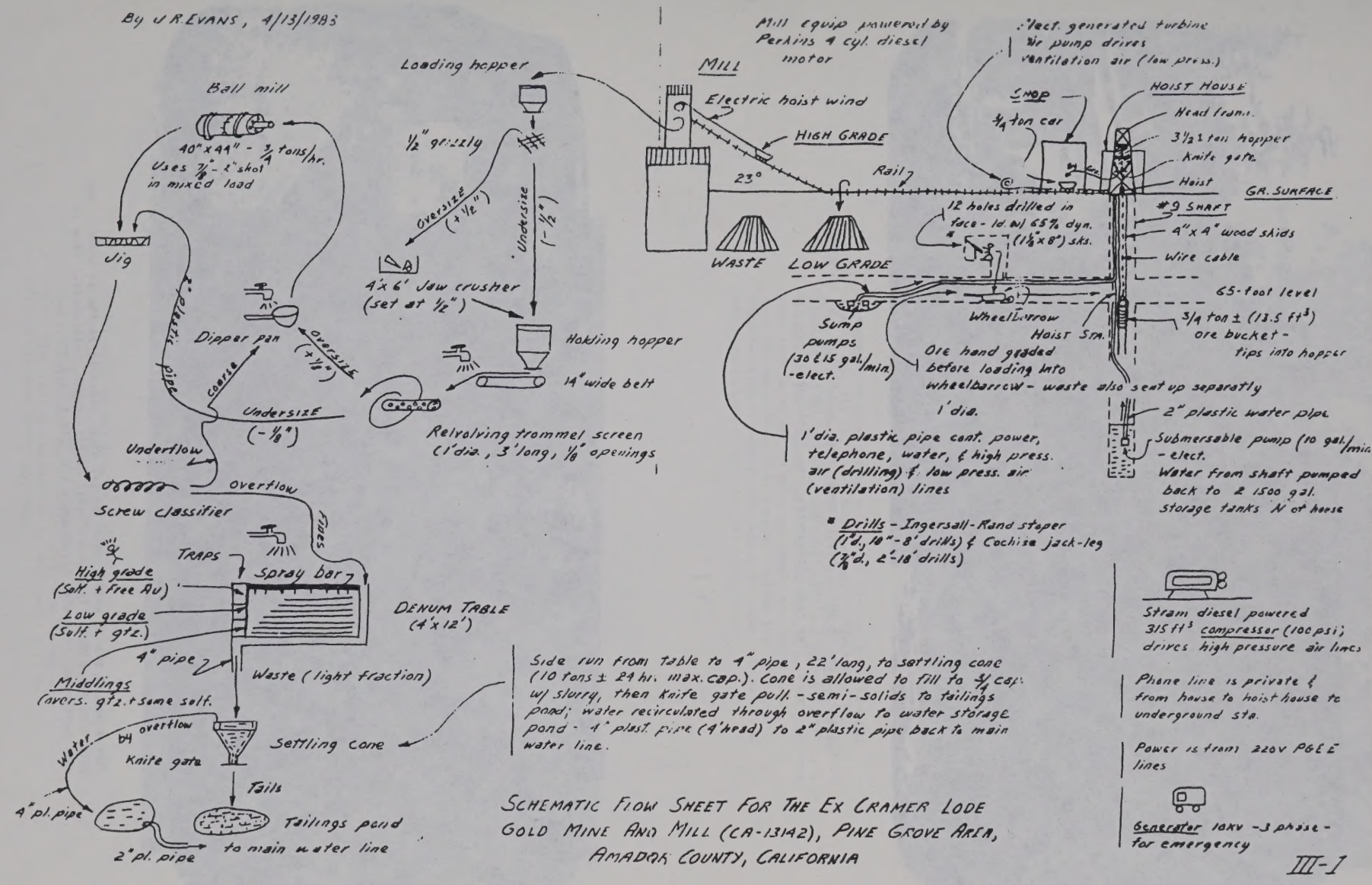
EXPLANATION

- Rubble
- QSW — Quaternary slope wash
- 3' / 63 — Quartz vein (mainly filling shear zones) showing dip & thickness, dashed where approximate
- Pcp — Paleozoic Calaveras Formation; mainly phyllite, some metasiltstone
- Contact between rock units, dashed where approximate
- 90 — Shear zone showing dip
- Open cut showing underground extension
- ⊗ — Fine-grained gold on fracture planes in quartz vein
- #5 — Number of mine working

Geology and mine workings mapped with Brunton compass and measuring tape by: J.R. Evans, R.M Waiwood, and M.J. Horne, 4/11-15, 29-30/1983

GEOLOGIC MAP OF MINE WORKINGS #3, #4, #5, #13, AND #15, EX CRAMER LODE GOLD MINE (CA-13142), PINE GROVE AREA, AMADOR COUNTY, CALIFORNIA


Shaft #6
Shaft #9
Stope #1
Raise #1
Floor, Stope #1
Crosscut #1
Crosscut #2
see F-F'
Pcp
Pcp
Pcp

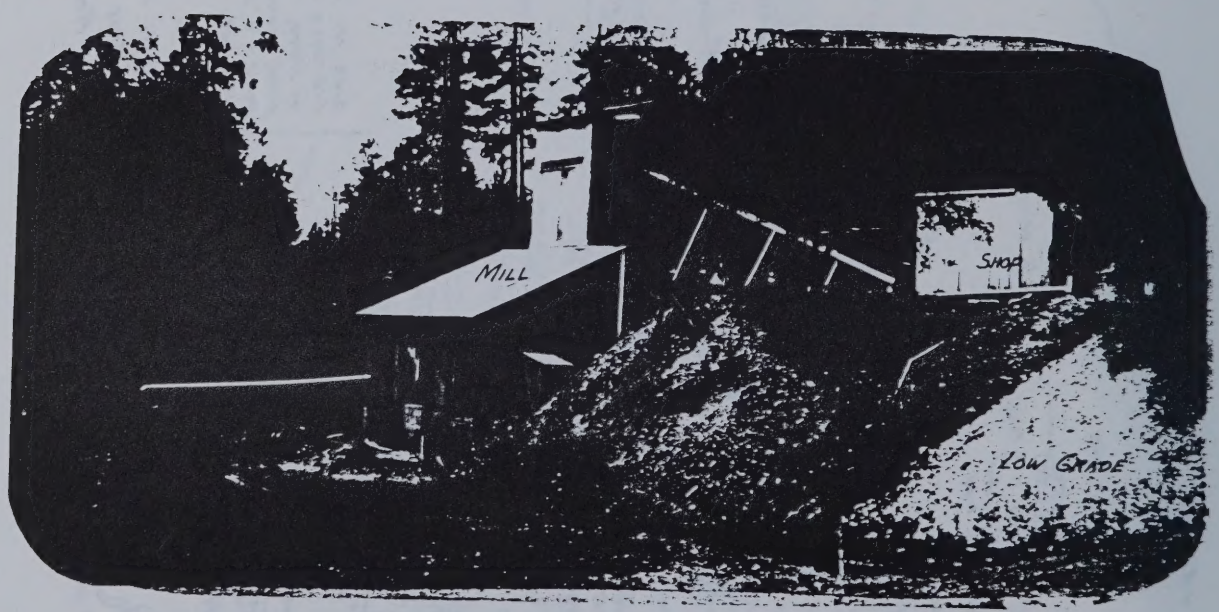

By J.R. Evans, 4/13/1983
Ball mill
40" x 44" - 3/4 tons/hr.
Uses 7/8" - 2" shot in mixed load
Jig
Concentrate pipe
Dipper pan
Coarse
Oversize (+1/2")
Undersize (-1/8")
Underflow
Overflow
Screw classifier
Fines
Traps
High grade (Salt. + free Au)
Low grade (Salt. + qtz.)
Spray bar
Denum Table (4' x 12')
4" pipe
Middlings (overs. qtz. + some salt.
Waste (light fraction)
Water
overflow
Knife gate
Settling cone
Tails
4" pl. pipe
Tailings pond
2" pl. pipe
to main water line
Loading hopper
1/2" grizzly
Oversize (+1/2")
Undersize (-1/2")
4' x 6' Jaw crusher (set at 1/2")
Holding hopper
14" wide belt
Relrolving trommel screen (1' dia., 3' long, 1/8" openings
Mill equip powered by Perkins 4 cyl. diesel motor
MILL
Electric hoist wind
HIGH GRADE
23°
Rail
WASTE
LOW GRADE
Elect. generated turbine air pump drives ventilation air (low press.)
SHOP
HOIST HOUSE
1/4 ton car
Head frame
3 1/2 ton hopper
Knife gate
Hoist
GR. SURFACE
#9 SHAFT
12 holes drilled in face - 1d w/ 65% dyn. (1 1/8" x 8") sks.
4" x 4" wood skids
Wire cable
65-foot level
Sump pumps (30 & 15 gal./min) - elect.
Wheelbarrow
Hoist Sm.
3/4 ton ± (13.5 ft³) ore bucket - tips into hopper
Ore hand graded before loading into wheelbarrow - waste also sent up separately
1' dia.
2" plastic water pipe
Submersable pump (10 gal./min - elect.
Water from shaft pumped back to 2 1500 gal. storage tanks N of house
1' dia. plastic pipe cont. power, telephone, water, & high press. air (drilling) & low press. air (ventilation) lines
* Drills - Ingersall-Rand stoper (1" d, 10" - 8' drills) & Cochise jack-leg (7/8" d, 2' - 18' drills)
Stram diesel powered 315 ft³ compressor (100 psi); drives high pressure air lines
Phone line is private & from house to hoist house to underground sta.
Power is from 220V PG&E lines
Generator 10kv - 3 phase - for emergency

Side run from table to 4" pipe, 22' long, to settling cone (10 tons ± 24 hr. max. cap.). Cone is allowed to fill to 3/4 cap. w/ slurry, then knife gate pull. - semi-solids to tailings pond; water recirculated through overflow to water storage pond - 4" plast. pipe (4' head) to 2" plastic pipe back to main water line.

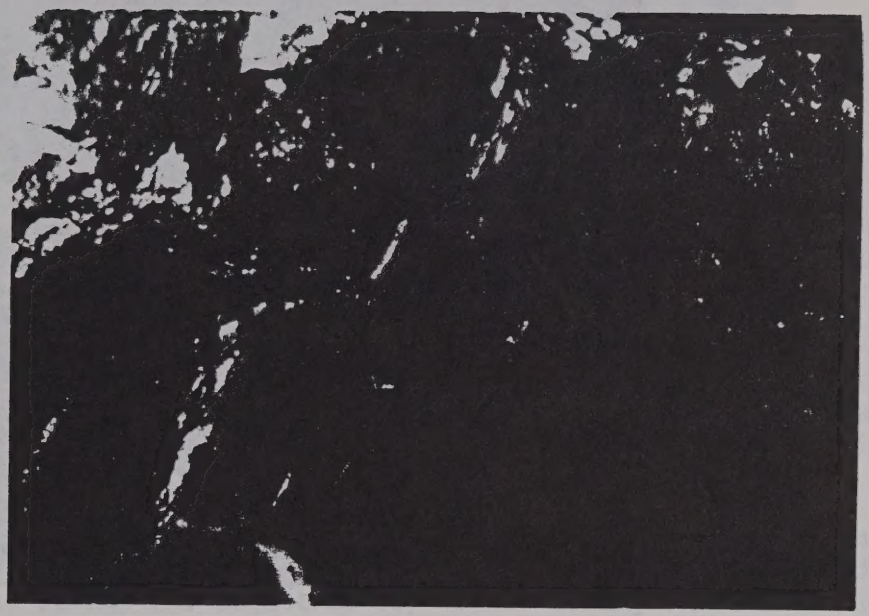
SCHEMATIC FLOW SHEET FOR THE EX CRAMER LODE GOLD MINE AND MILL (CA-13142), PINE GROVE AREA, AMADOR COUNTY, CALIFORNIA

III-1

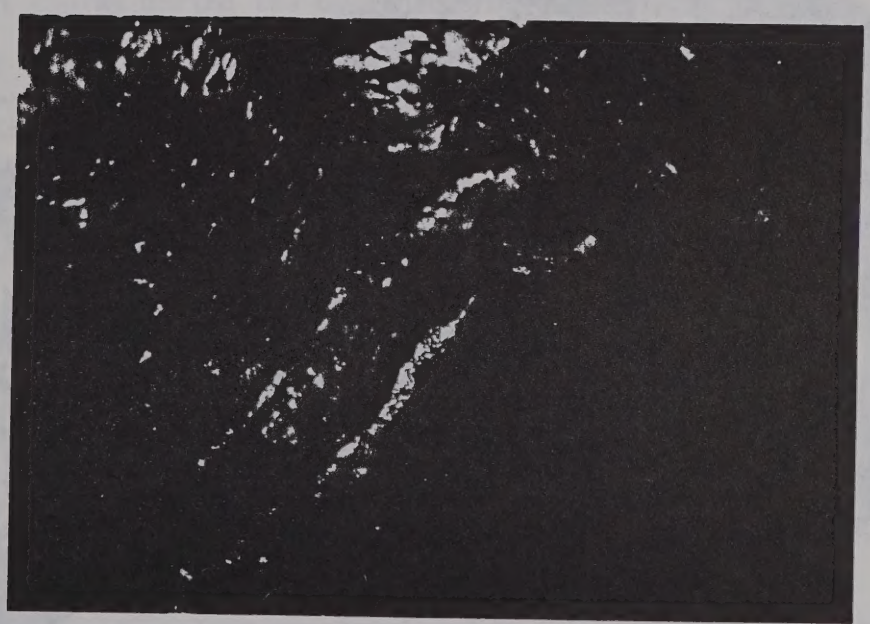
Photograph of the #9 shaft, hoist house, shop, and mill at the Ex Cramer lode gold mine (CA-13142), Pine Grove area, Amador County, California. View is west-southwest. See also Attachments I-6, III-1, and IV-2.



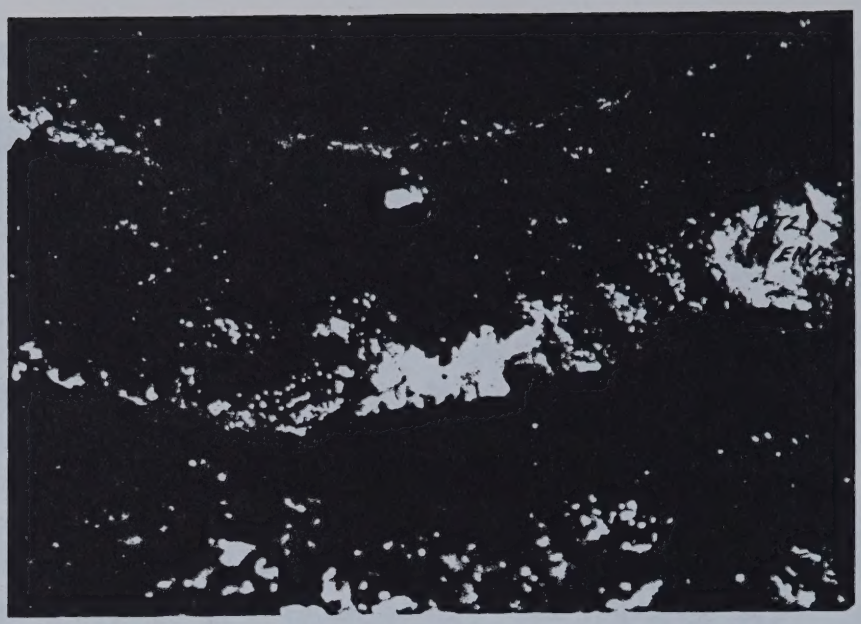
Photograph of the #9 shaft, hoist house, shop, and mill at the Ex Cramer lode gold mine (CA-13142), Pine Grove area, Amador County, California. View is west-northwest. See also Attachments I-6, III-1, and IV-1.



Photograph of quartz vein in back of 65-foot level showing sample site #1; Ex Cramer lode gold mine (CA-13142), Pine Grove area, Amador County, California. Vein is hard, dense contains sulfide minerals and free gold, and dips 65°S. Because of the "jagged" nature of the vein, great care was exercised so as not to make the sample too long. True vein thickness here is 41 inches. Yellow line is paint to show location of sample site, which is about 8 inches from the actual channel cut. See Attachment I-8.



Photograph of quartz vein in back of 65-foot level showing sample site #2; Ex Cramer lode gold mine (CA-13142), Pine Grove area, Amador County, California. Vein is hard, dense, contains sulfide minerals and free gold, and dips 70°S. True vein thickness here is 30 inches. See also Attachments I-8, IV-8, and IV-10.



Photograph of quartz vein in back of 65-foot level showing sample site #3; Ex Cramer lode gold mine (CA-13142), Pine Grove area, Amador County, California. Vein is hard, dense, contains sulfide minerals and dips 70°S. True vein thickness here is 42 inches. See also Attachments I-8, IV-8, and IV-9.

Photograph of quartz vein in west wall of stope #1, off 65-foot level just above sample site #4; Ex Cramer lode gold mine (CA-13142), Pine Grove area, Amador County, California. Vein is hard, dense, contains sulfide minerals and free gold, and dips 70°S. True vein thickness here is 37 inches. See also Attachments I-8, IV-8, IV-9 and IV-10.

PLACER GOLD MINE

The Golden Eagle (GE) placer mining claims Numbers 1, 2, and 3 (20 acres each), were located by Ruth A. LeCleir on March 5, 1981 along Moccasion Creek, in section 2, T. 2 S., R. 15 E., Tuolumne County, California. Subsequent to her location, Ms. LeCleir filed an application for mineral patent on the afore mentioned claims with the California State Office, BLM on January 7, 1985. All pertinent filings, postings and publishings of this intent have been completed. No adverse claims were made on the subject land in the patent application. Final Certificate of Mineral Entry was issued June 27, 1985.

Pursuant to the application, the Bakersfield District Office minerals staff conducted field examinations of the subject placer claims during the week of May 20-24, and August 26-30, 1985. During the examination of the Golden Eagle placer mining claims, the local geology was mapped with all associated mineral and surface improvements, and all discovery sites sampled. The claimant pointed out all the discovery sites and explained her mining plans for the subject claims.

The subject claims are underlain predominately by slates of the Upper Jurassic Mariposa Formation. The slates were overlain by auriferous river terrace and stream bed deposits along Moccasin Creek. Moccasin Creek is a perennial stream that crosses the GE Nos. 1 and 2 placer claims and flows northward, draining areas underlain by the Mother Lode gold belt. River terrace gravels or stream gravels were not found on the N1/2 of the Golden Eagle No. 3 placer claim. No known lodes were found on the subject claims during the examinations (see geologic map).

Processing of samples from the claims reflected the manner in which the claimant proposes to mine the property. On the GE No. 1 claim, dredging of Moccasin Creek bed was proposed by the claimant as the best method to support discovery. R. Waiwood and J. Evans used a "production per unit time of operation" approach in evaluating the material. We determined that mining the aforesaid material would yield gold at a rate of $10.84 per hour (gold at $360 per troy ounce).

On the GE Nos. 2 and 3 claims, the claimant indicated that she intends to mine the river terrace gravel using a dozer-loader operation. The material will be passed through a placer plant that she has access to through her associate on a shared return basis. It was determined that the discovery was in the river terrace gravels on these two claims. We sampled the claims by taking bulk samples, from 0.5 to 1.1 cubic yards at the gravel face, at areas the claimant indicated were her discoveries. Sample sites were cleared and taken with a Case 160 loader-backhoe and stacked near our portable sample testing plant.

Our placer gold testing plant was developed by Evans at the Folsom Mineral Lab. It is consistent with the proposed operation of the claimant. Gravel is fed into a hopper on a Denver Gold Saver where it passes through a slotted trommel with the oversize (+1/4") passing out the end over a

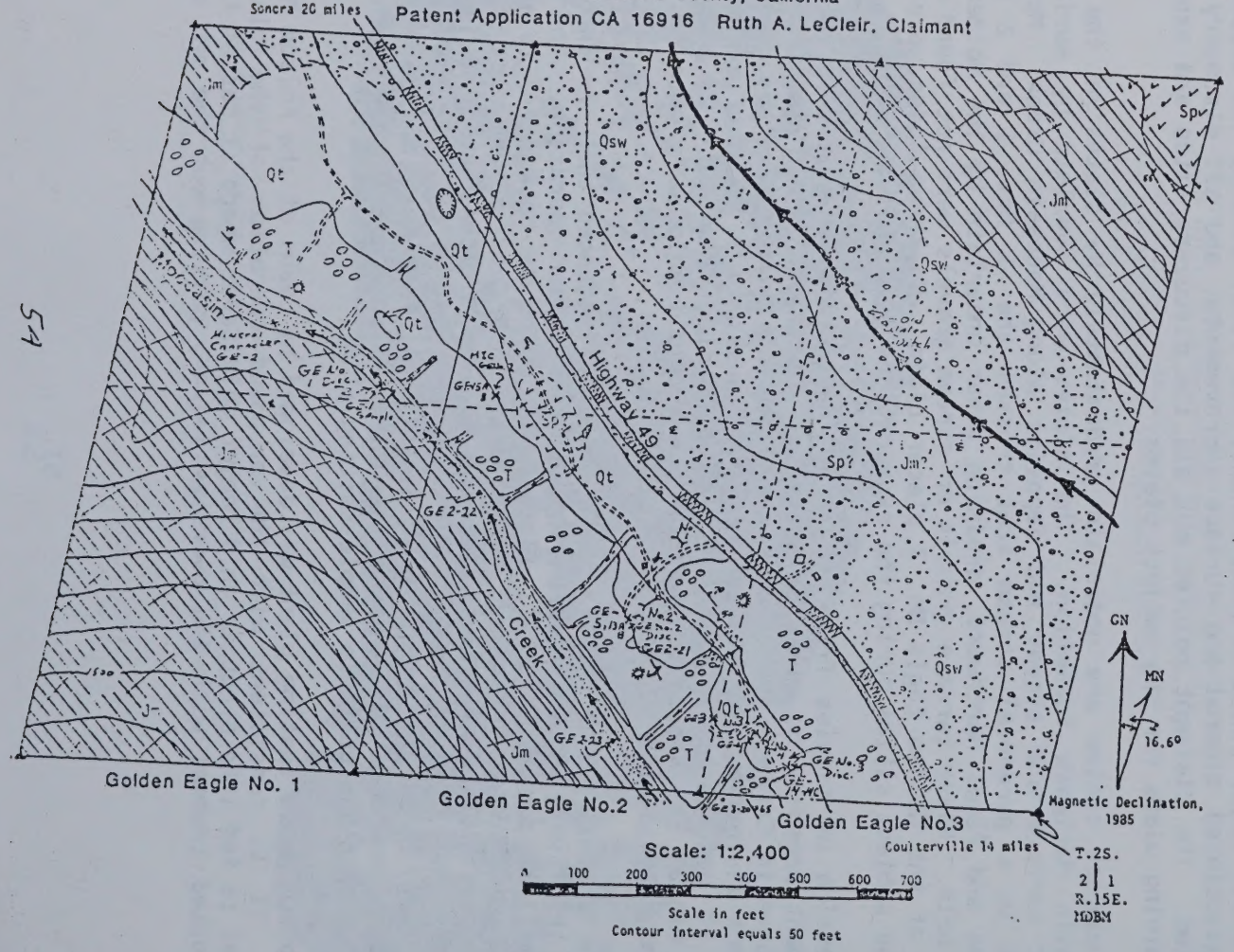
GEOLOGIC MAP

of the

Golden Eagle Placer Mining Claims, Moccasin Creek Area

Tuolumno County, California

Patent Application CA 16916 Ruth A. LeCleir, Claimant



EXPLANATION

Geologic Units

Cenozoic — Quaternary

- **Qal** — Recent alluvial gravels consisting of clean sands, cobbles, and boulders within active streambeds; locally auriferous.
- **Qsw** — Recent slope wash. Angular to subangular cobbles and boulders in a clay to sand matrix.
- **Qt** — Recent river terrace gravels consisting of subangular-rounded boulders and cobbles interlayered with clay, sand, and gravel lenses on slate bedrock. Locally auriferous.

Mesozoic

- **Sp** — Cretaceous (Evans, 1977) serpentinite, locally intrusive along slate bedding. Chrysotile asbestos veinlets, 0.04-0.75 inches wide are present, locally.
- **Jm** — Upper Jurrasic Mariposa Formation. Locally hard fissile slates, brown to grey-green in color; foliation generally parallel with bedding. Some local quartz veins are gold bearing.

Geologic Symbols

- Contact between geologic units; dashed where approximate; dotted where inferred.
- Strike and dip of foliation; subparallel to bedding where measured.
- Fault. Dashed where approximate; dotted where inferred.

Mineral Development/Surface Improvements

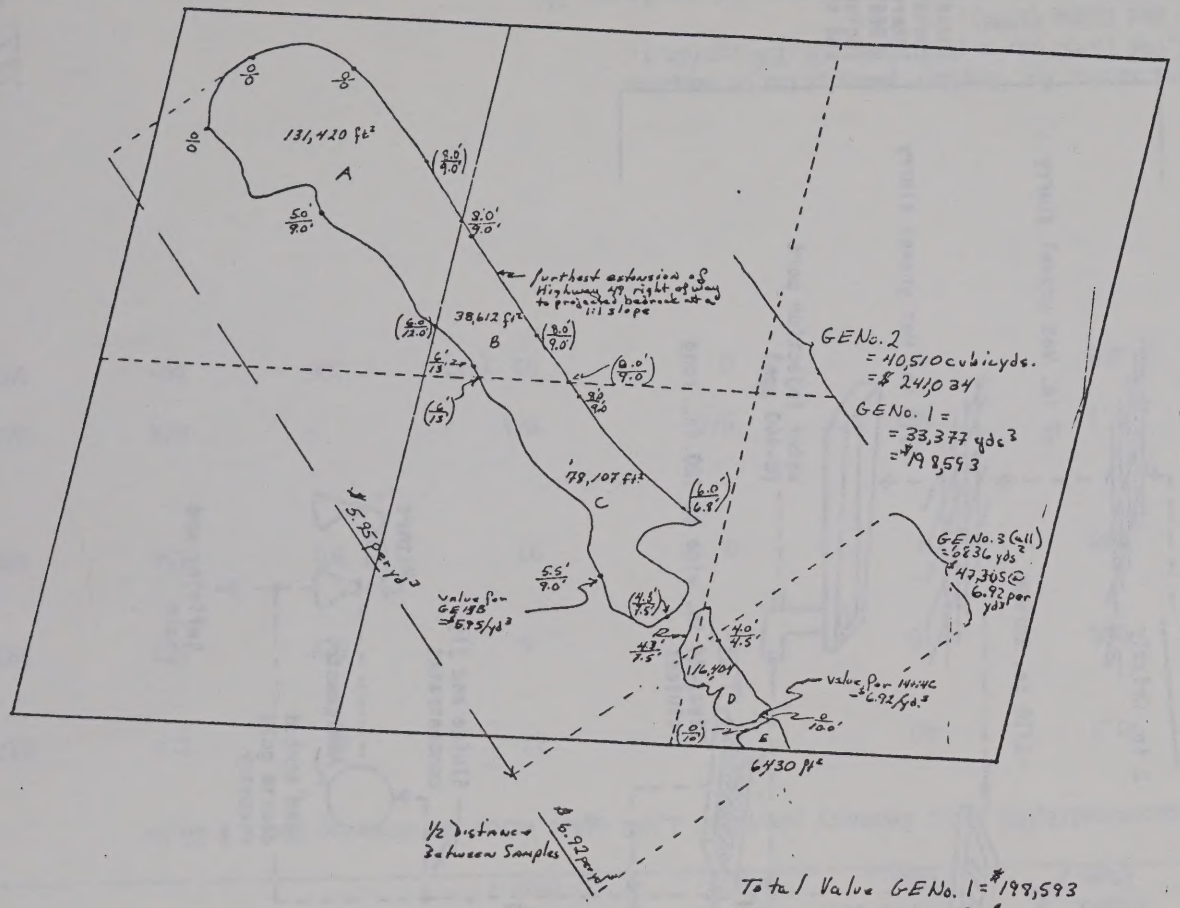
- **T** — Worked placer tailings; consists of boulder and gravel piles on Mariposa slates.
- Backhoe trench
- Drainage ditch
- Water drainage channel for old placer mining operations.
- Shaft; adit
- Old placer workings.
- Hydraulic gun station
- Earthwork dam
- Dirt access road
- Shed; trailer
- Claim corner post (4" PVC pipe, 5' above the ground); line shows claim boundary.
- Centerline of claim for 10 acre mineral in character.
- ×GE Sample site designation and number.

Base map compiled from survey data provided by the applicant, USGS Moccasin quadrangle 7 1/2'map, and stadia survey performed by the Bakersfield District during the period May 20-24, 1985. Geologic and mineral development data compiled from field investigation performed during the same period. All survey data tied to the quarter corner sections 1 and 2. Survey data adjusted to close on claim corner monuments.

Geologic map by R. Walwood, L. Vredenburgh, M. Horne, M. Ziegenbein, and J. Evans, May 20-24, 1985.

54

58-73



Total Value GEN0. 1 = $198,593
GEN0.2 = $241,034
GEN0.3 = 47,305
Total $486,932

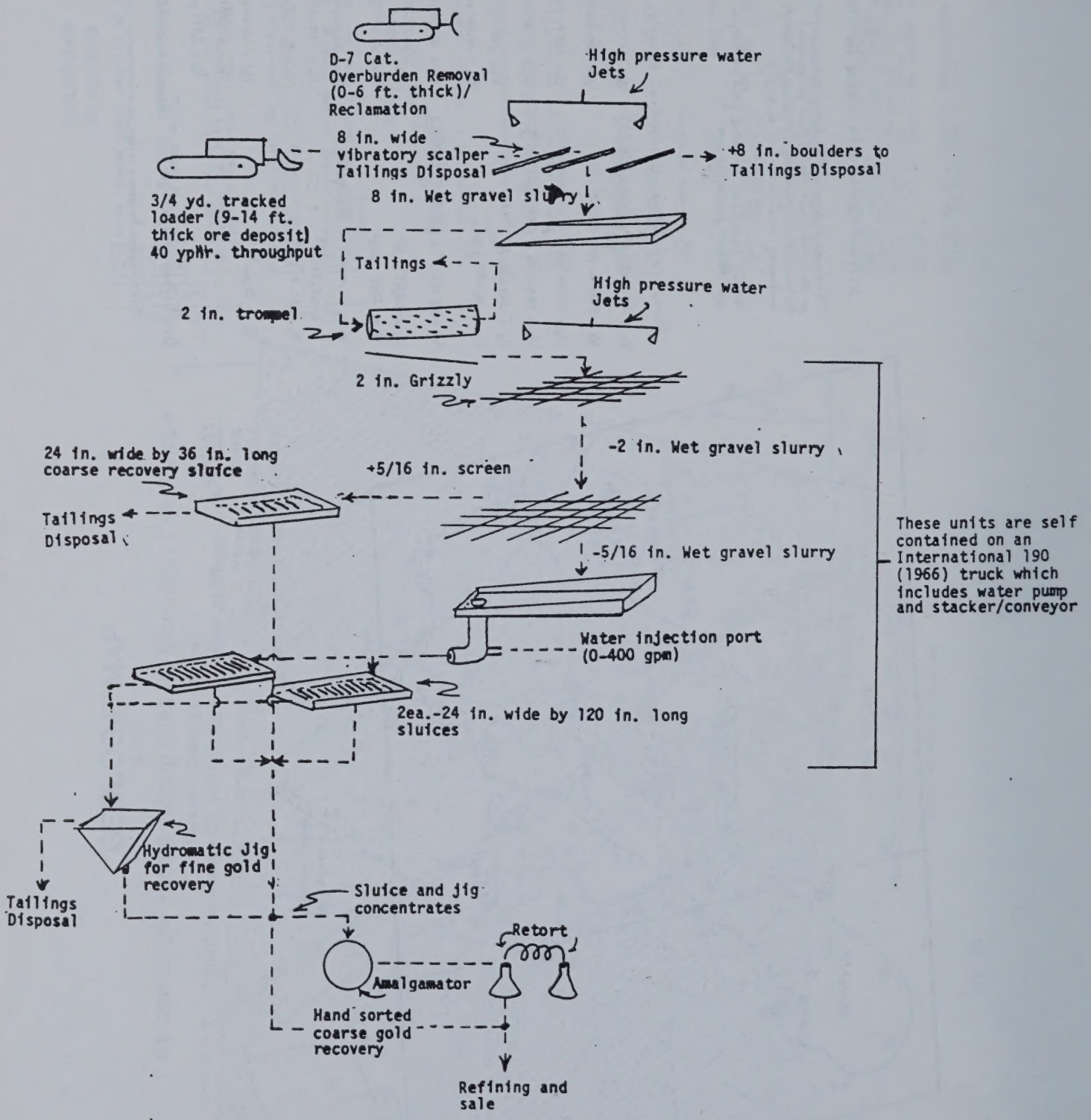
Volume Calculations / Value Determinations

Thickness determined by direct measurement or inferred (parentheses) from proportional distances. Survey was by stadia rod / transit telemetry. All measurements to 0.1 foot.

Value based on 900 fine gold at $860 per oz or $0.0104 per milligram.

Volume Calculations - Overburden	Gravels
V_A = 131,420 ft² × $\frac{(0+0+0+9+8+6+5)}{7}$	V_A = 131,420 × $\frac{(0+0+0+9+9+12+9)}{7}$
V_A = 506,906 ft³	V_A = 901,166 ft³
V_A = 18,774 yds³	V_A = 33,377 yds³
V_B = 38612 ft² × $\frac{(8+8+8+6+6)}{5}$	V_B = 38,612 ft² × $\frac{(9+9+9+14+12)}{5}$
V_B = 273,006 ft³	V_B = 386,120 ft³
V_B = 10,297 yds³	V_B = 14,301 yds³
V_C = 78,107 ft² × $\frac{(8+6+4.3+5.5+6)}{5}$	V_C = 78,107 ft² × $\frac{(9+6+8+7.5+9+13)}{5}$
V_C = 465,518 ft³	V_C = 707,649 ft³
V_C = 17,241 yds³	V_C = 26,209 yds³
V_D = 16,404 ft² × $\frac{(4.8+0+4.3)}{3}$	V_D = 16,404 ft² × $\frac{(4.5+10+7.5)}{3}$
V_D = 115,384 ft³	V_D = 120,296 ft³
V_D = 1,681 yds³	V_D = 4,455 yds³
V_E = 0 yds³	V_E = 6430 ft² × 10'
	V_E = 64,300 ft³
	V_E = 2381 yds³
Overburden = 47,993 yds³	Gravels = 80,723 yds³
Overburden to ore 1:1.7	

Schematic Diagram of Operations at the Golden Eagle Placer Mine



III-2

Table 3

VALUE DETERMINATION STATISTICS FOR EACH DISCOVERY SAMPLE

Sample Number	Sample Description	Volume of Sample ($yds.^3$)	Weight of Conc. (lbs.)	Gold Recovered by gravity: Sluice (mgs.)[5]	Gold Recovered by gravity: Knudsen Bowl (mgs.)	Gold Recovered by Amalgam-Sluice (mgs.)	Gold Recovered by Aamlgam-Knudsen Bowl (mgs.)	Total Gold Recovered (mgs.)	$Gold/yd^3$ (mgs,)	Value[2] $Gold/yd.^3$ (cents)
1	GE No. 1 Discovery; Qal-river gravels	Time: 2 hours; gold recovered:2,083 mgs.; recovery per hour: 1,042 mgs.; Value per dredging hour: $ 10.84								
13 A	GE No. 2 Discovery; Qsw layer	0.40	0.8	0.0	40	0.0	47	87	218	227
13 B	GE No. 2 Discovery; Qt layer	1.1	4.9	608	10	5	6	629	572	595
14	GE No. 3(S1/2) Disc; Qt layer (total Sample)	0.46	2.1	208	0	0	93	301	654	680
14 C	GE No. 3(S1/2) Disc.[6];		N/A	0.1	N/A	N/A	N/A	5	N/A	N/A
14	Total Sample 14 including bedrock	0.46	2.2	208	0	0	93 (+5)	306	665	692

85

1 Refer to Table 1, Sample Statistics, and mineral report for complete description of samples.
2 Value per milligram of gold determined to be 1.04¢ ($360/oz. x .900 fine - 31,104 mgs/oz.).
3 Amalgamation by the procedures in Wells (1971) and Evans (1984).
4 Sample amalgamated directly; gold recovered and weighed and added to the recovery of sample No. 14.
5 Milligrams.
6 Sample added to total No. 14 sample as it represented bedrock portionof sample.

Table 2

SAMPLE STATISTICS

Sample	Sample Description (Mining claim[1]; (rock unit[2];method of taking[3]-purpose[4])	Date Taken	Measurement Unit	No. of Measurement Units	Dimension of Cut	Volume of Gravels (ft.^{3})	Volume of Boulders (ft.^{3})	Swell factor 10%; (ft.^{3})	Total Volume in place (ft.^{3})	Total Volume (Yds.^{3})	Boulder[6] Factor (%)	Gold recovered (mgs.[10])
1	GE No. 1; Qal; DR-DISC.;	5-22-85 5-23-85	time	2.0 hours	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2,083
2	GE No. 1; Qal; DR-MIC.	5-24-85	time	2 hours	N/A	N/A	N/A	N/A	N/A	N/A	N/A	coarse gold obs.
3	GE No. 2; Qt; HC-MIC	5-22-85	weight[5]	582 lbs.	Irreg.[9]	5.2	1.0	4.7	5.7	0.21	21	73.8
4	GE No. 3; Qt HC-MIC	5-23-85	weight[5]	456 lbs.	Irreg.[9]		0.75	3.7	4.4	0.63	17	34.4
5	GE No. 2; Qt; HC-MIC	5-23-85	weight[5]	354 lbs.	Irreg.[9]		2.0	2.9	4.9	0.18	41	27.4
13 A	GE No. 2; Qsw (gravels); BHC-DISC..	8-27-85	5-gal. buckets[8]	14.8 bu.	5.5'(l)x42"(w) x6"(d)	9.9		8.9				
13 A	GE No. 2;Qsw(boulders); BHC-DISC.	8-27-85	weight[7]	359 lbs.	same as above		2.0		10.9	0.40	18	87
13 B	GE No. 2; Qt (gravels); BHC-DISC.	8-28-85	5-gal. buckets	34.6 bu.	9'(l)x36"(w) xl'(d)	23.2		20.9				
13 B	GE No. 2; Qt (boulders); BHC-DISC.	8-28-85	weight volume displ.	116 lbs. 61.9 gal.	same as above		0.6 8.3		29.8	1.10	30	572
14	GE No. 3; Qt (Gravels); BHC-DISC.	8-29-85	buckets	15.9 bu.	10'(l)x24"(w) x6.5(d)	10.6		9.6				
14	GE No. 3; Qt (boulders); BHC-DISC.	8-29-85	weight	540 lbs.	same as above		2.9		12.5	0.46	23	301
14 C	GE No. 3; Qt/Jm; BRC-DISC.	8-30-85	area weight	71.5 in. 2.5 lbs.	11"x6.5" xl"(d)	N/A	N/A	N/A				None
15 A	GE No. 2; Qsw; PSC-MIC;	8-30-85	weight	27 lbs.	6'(l)x6"(w) xl"(d)[9]	Approx. 0.25	N/A	N/A				1-No. 3
15 B	GE No. 2; Qt; PSC-MIC;	8-30-85	weight	67 lbs.	10.5'(l)x6"(w) x2"(d)	approx. 0.61	N/A	N/A	N/A	N/A	N/A	11-No.3

1 Mining claims are denoted as GE No. (Golden Eagle Number).
2 Rock units are described in the geologic map prepared for this report.
3 BHC (backhoe cut); DR (dredge operation; 3 " intake); BRC (bedrock cut 1" deep); HC (hand cut); and PSC (pick and shovel cut).
4 DISC. (discovery point; and MIC (mineral in character determination).
5 Weight determined to be 111.24 pounds per cubic foot.
6 Boulders - +6 inch fraction not run through recovery circuit. Volume determined by weight water displacement.
7 1 cubic foot of boulders determined to weigh 184 lbs. by water displacement and mineral density.
8 1-5 gallon bucket represents 0.67 cubic feet of volume. Loose gravels in the 5 gallon bucket represent 0.60 cubic feet in place volume.
9 Irregular sample cut total depth exposed (generally from 7-9 feet); not to bedrock. For Mineral in character determination.
10 Milligrams

Table 4 DESCRIPTION AND CHARACTER OF GOLD RECOVERED

Sample Number	Comments	Color and Staining	Surface Texture	Associated Minerals Observed	Shape	Size[1]	Evidence of Salting
1	GE No. 1; Dredge	Bright yellow	Smooth, slight pit.	None	Flattish, elongate w/ rnd. edges. Some w/ qtz.	Most coarse, minor fines	None
13 A	GE No. 2; Discovery Sample	Bright Yellow	Smooth	None	Ovoid, flat, round edges.	All flat except for amal-gamator Au which is v/f.	None
13 B	GE No. 2; Sluice; Discovery Sample	Bright Yellow w/ Fe stn. on all part.	Rough and pitted	None	Coarse-elong., flat rnd. edge; med.&fine-elong. to rnd. w/ rnd. edges and flat	15 coarse, med., & fine; amalgam. v/f.	None
13 B	GE No. 2; Knudsen Bowl; Discovery	Bright yellow.	Smooth, some pitted.	None	Flat rnd. edges, elongate.	All flakes med. to fine; amalgam. v/f.	None
14	GE No. 3; Sluice; Discovery	Bright yellow, loc. irridescent w/ Fe. stn.	Crse. pitted; fine smooth.	None	Elong. to ovoid, flat, rnd. edges.	8 pieces coarse, remain. med. to fine, except amal. which is v/f.	None
14	GE No. 3; Knudsen Bowl; Discovery.	Bright Yellow	Smooth	None	Flattish	all v/f as obs. in pan.	None

[1] Coarse gold=+10 mesh (2.00 mm or 0.079mm); medium gold= -10 to +20 mesh (0.84mm or 0.033 in); fine gold = -20 to +40 mesh (0.420 mm or 0.017 in); and very fine (v/f)= -40 mesh.

Description of concentrates: A study of the mineralogy of the heavy mineral concentrate (sluice and Knudsen Bowl) from sample Nos. GE 13 B and 14 was conducted by P. Milne at the Folsom Lab. Microscopic examination of the sample concentrates showed that they were essentially of the same mineral composition. Therefore, the following desciption pertains to both samples. The concentrates consist primarily of magnetite, ilmenite and apatite with minor amounts of zircon and rutil (?). The magnetite is in fine to medium grained sub-angular fragments, although some larger paeticles are as much as 0.08 inches in diameter, in well formed octahedral crystals. The ilmenite is composed of fine to medium grained, reddish brown to black particles. Larger, well formed hexagonal crystals as much as 0.08 inches in size are also present.

Apatite is the chief mineral which occurs in the felsic fraction of the concentrate. The apatite is primarily green, fragmented and very fine grained. In general it does not show crystal faces. Zircon (?) also occurs in minor amounts and appears as fine grained, greenish brown, prismatic crystals. Sparce medium to fine grained fragments of quartz, biotite, feldspar, and muscovite, as rell as fragments of chert, serpemtine, gabbro and granite, also occur in the concentrate.

Table 6 - Table of Costs Applied to a 215 Cubic Yard per Day, 220 Day per Year, 1 Year Operation on the GE Nos. 2 and 3 placer mining claims

Factors considered for a 220 day per year operation take into account non-operation days for weekends, holidays, and down time of equipment. A total of 215 cubic yards of river terrace gravels will by mined per day. About 130 cubic yards of overburden will also be removed (here considered at a day rate). Total volume of minable river terrace gravels mined in the one year period is 47,346 cubic yards, the total deposit on the GE Nos. 2 and 3 placer claims. The equipment identified in the Economic Evaluation section of this report will be addressed in this table. All profits are to be split 50/50 between the claimant and Mr. Walt Thorne.

Costs	Total Mining Costs Per Year	Cost Per Cubic Yard of Gravel
Operating Costs:		
Overburden removal at $0.75 per cubic yard of overburden; 8 hours per day with a D-7F dozer (200 hp.); Total overburden 29,219 cubic yards for the GE Nos. 2, and 3 claims (at a rate of 130 yards moved per day):	$ 21,914	$0.463 1/
Construction of water retention pond; 50' x 50' x 5' deep (93,750 gallons capacity) with a clay liner:	1,000	0.021
Labor costs for an 8 hour day; the claim owner will operate the placer plant at a here assigned wage of $5.00/hr.	8,800	0.186 2/
Labor costs for an 8 hour day; Walt Thorne, partner, at a here assigned wages of $10.00/hr. for heavy equipment operation and repair:	17,600	0.372 2/

1/ Total cost of excavating the overburden ($21,914) divided by total minable gravels (47,346 cubic yards).

2/ Wages agreed to by Claimant and the BLM mineral examiners in oral communication on August 30, 1985, during the field examination of the subject claims.

Table 6 (Cont'd)

Costs	Total Mining Costs Per Year	Cost Per Cubic Yard of Gravel
Fuel costs for a day operation is as follows:		
Gasoline for pumps and generator is 3.5 gallons per day at $1.50 per gallon	1,155	0.024
Diesel fuel for placer plant (15 gallons per day) and the tracked loader (25 gallons per day) is 40 gallons at $1.30 per gallon:	11,440	0.242
Total Operating Costs:	$ 61,909	$1.308

Costs	Total Mining Costs Per Year	Cost Per Cubic Yard of Gravel
Capital Costs:		
Capital outlay consists of $16,000 for one 25 yph American Balanced Jig (M&W Tool Co., Inc., F.O.B. Oakland), $1,000 for electric cable, hoses, couplings, etc, and $1,000 for a 3-kw Craftsman Model 3500 electric generator for a total of $18,000. Servicing this debt at 13.5% yearly interest on a short term loan for 1 year:	$ 20,130	$ 0.425

Taxes:

California property tax applies. This is a tax assessed by the State of California "at value" of the mineral property. It is a complex tax system and mostly used on operating mineral properties. For purposes of this report we are assuming it will be one-percent of the gross income.

Federal income tax — Refer to Table 8

California state personal income tax — Refer to Table 8

Table 7
Cash Flow Analysis

Given: Data in Tables 5, 6, and 8

Operand		1 Year 200 cubic Yard per Day Operation	Per Cubic Yard of Minable Ore
Value per Cubic Yard	=	$ 6.09 1/	$ 6.090 1/
Cubic Yards Mined (1-Year Operation)	x	47,346	
Gross Income (GI;$)	=	288,337	6.090
Operating Costs ($)	-	61,909	- 1.308
Net Income ($)	=	226,428	= 4.782
1% California Property Tax (applied to GI;$)	-	2,883	- 0.061
Taxable Income ($)	=	223,545	4.721
Federal and California personal income tax ($; 35% from suppl. Table 8)	-	78,241	- 1.653
Operating Cash Flow ($)	=	145,304	= 3.068
Capital Investments ($)	-	20,130	- 0.425
Cash Flow 2/ ($)	=	$ 125,175	$ 2.643

1/ Weighted average based on the following calculations:

GE No. 3 placer claim deposit volume in cubic yards		6,836
GE No. 3 placer claim deposit value per cubic yard	x	$ 6.92
GE No. 3 placer claim gross value ($)	=	$ 47,305
GE No. 2 placer claim deposit volume in cubic yards		40,510
GE No. 2 placer claim deposit value per cubic yard	x	$ 5.95
GE No. 2 placer claim Gross Value ($)	=	$241,034
GE No. 3 and No. 2 total gross value		$288,339
GE No. 3 and No. 2 total volume in cubic yards		47,346
Value per cubic yard for GE Nos. 2 and 3 (weighted)	=	$ 6.09

2/ Net present value for the Golden Eagle Nos. 2 and 3 placer mining claims.

Table 8
Taxes Applied to Taxable Income

All taxes applied are on individual personal income applied to the taxable income on table 6 (gross income less operating costs). Rates applied were for federal and California state income tax applied to single taxpayers with no deductions for the tax year 1985.

Federal tax rate (Schedule 1040): $ 30,009 + 50% over $ 85,130

California state tax rate (Schedule 540): $ 4,633 + 11% over $ 57,200

For a:	1-Year Operation
Taxable Income:	$223,545
50% Individual Income:	111,772
Federal Tax from Formula (50% Individual):	43,330
Federal Tax from Formula (100% of profit):	86,660
California Tax from Formula (50% Individual):	10,636
California Tax from Formula (100% of profit):	21,272

Federal tax percentage of taxable income:

$$\frac{\$\ 86,666}{\$\ 223,545} \times 100 = 38.3\%$$

California tax percentage of taxable income:

$$\frac{\$\ 21,272}{\$\ 223,545} \times 100 = 9.5\%$$

Total tax rate for combined state and federal income tax is: 48.3%

It is assumed by the authors that standard deductions would be taken, in addition to depreciation on equipment that are not known at this time. It is fair to estimate that overall taxes applied, less state property tax, would be 35%.

Combined federal and state tax = 0.35 x $223,545

= $ 78,241

This is applied against the taxable income on Table 7.

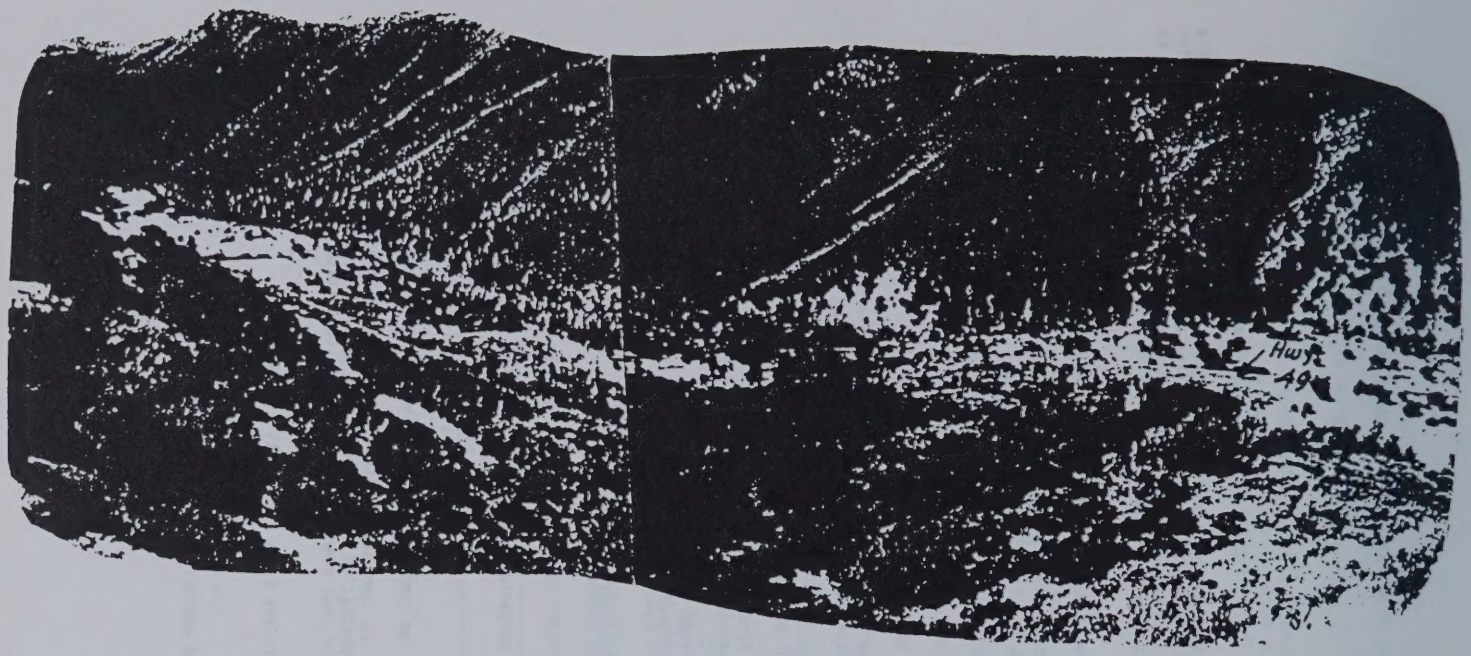


Photo 1. Panoramic view of the Golden Eagle placer mining claims in the Moccasin Creek drainage on May 21, 1985. View west from section corner intersection of Sections 1, 2, 35, and 36. Highway 49 is visible in the center of the photo. See Attachment 1-4.

Photo 2. View southeast along Moccasin Creek on the GE No. 1 placer claim on May 21, 1985. Site approximately 100 feet south of the discovery point and dredge sample point GE 1. Creek has cut 20-30' into Mariposa slate. Gravels are gold bearing, 6"-2' thick, and rest on the slate bedrock. See Attachment 1-8.

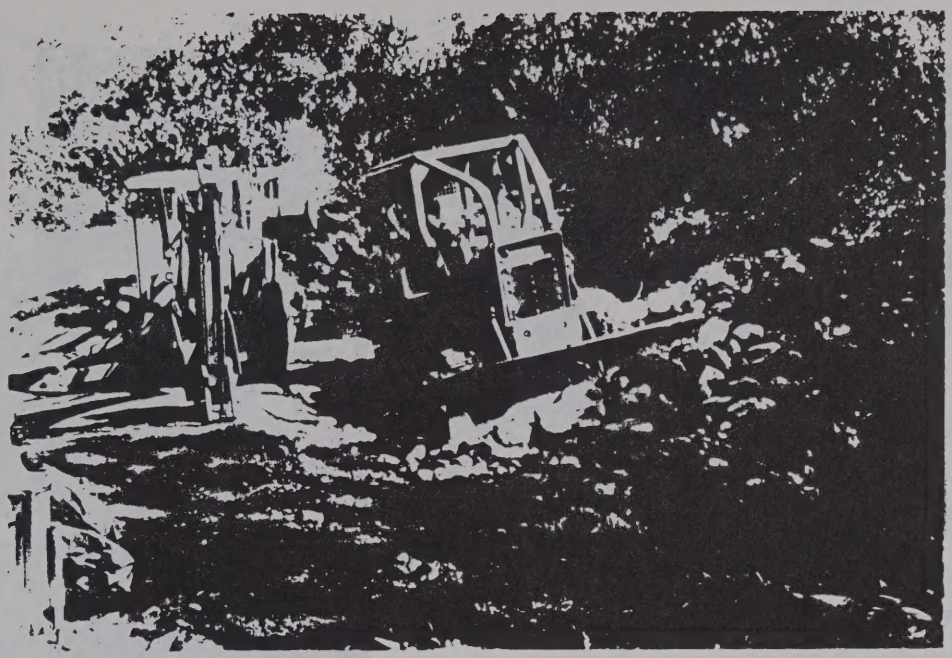


Photo 17. L. Davis removing material to expose bedrock at the discovery site on the GE No. 2 claim on August 27, 1985. Surface ahead of excavation was also leveled and cleared of large boulders. View is northwest.

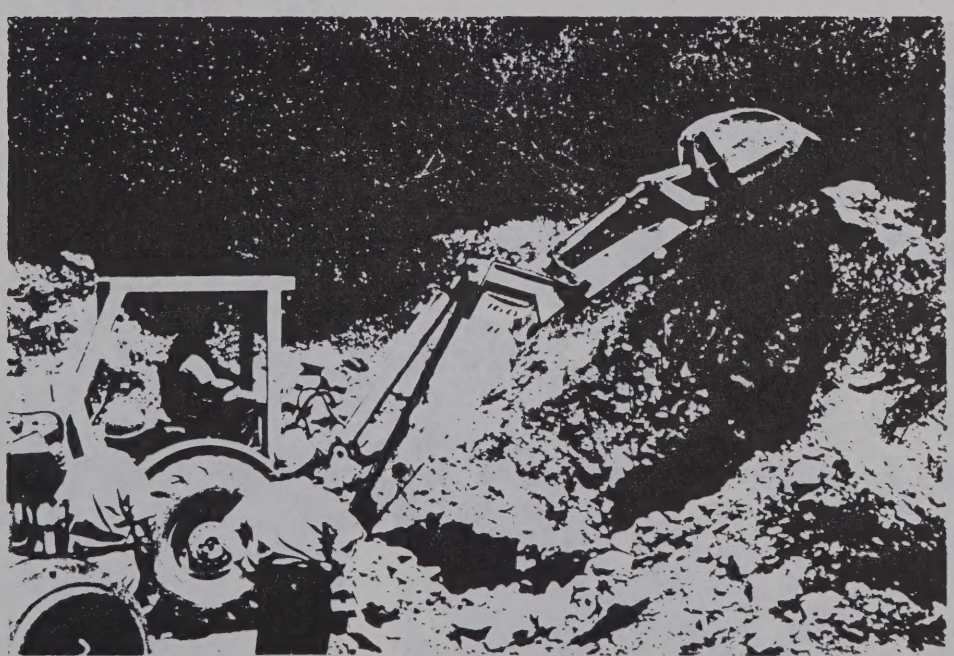


Photo 18. W. Thorne in a Case 160 loader-backhoe cleaning face prior to sampling at the discovery site on the GE No. 2 claim on August 27, 1985. Sampling face was "coarse" cleaned to bedrock. G. Dabai (right) and R. Waiwood (left) BLM are in left foreground. View is northwest.

Photo 21. Sampling of 13A at the discovery site on the GE No. 2 claim on August 27, 1985. View is east. See Photo 20.

Photo 22. BLM Mineral Examiner R. Waiwood measuring the sample cut dimensions for 13A on the GE No. 2 claim at the discovery site with a level rod. See Photo 21, and Tables 2, and 3. Photo taken on August 27, 1985. View is east.

Photo 38. BLM placer testing equipment set-up and ready for water test except for final adjustments of chute into Knudsen Bowl. The Denver Gold Saver is gasoline powered. See Photos 36, and 37. Photo taken on August 27, 1985. View is south.

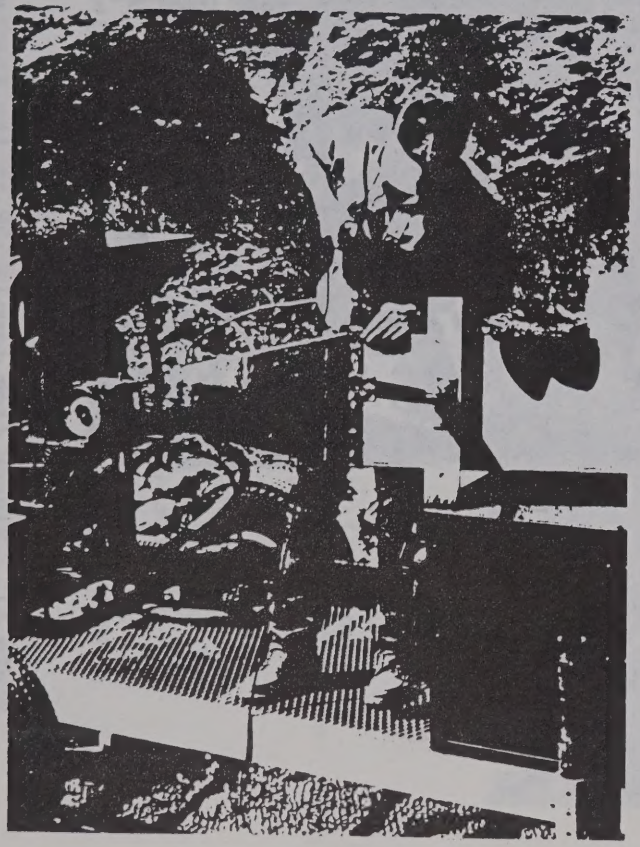


Photo 39. BLM Field Assistant, P. Milne making remodifications on metal chute into Knudsen Bowl from wooden chute. Our gasoline-powered generator has four electric outlets and allows for use of several power tools if necessary. Photo taken on August 27, 1985.

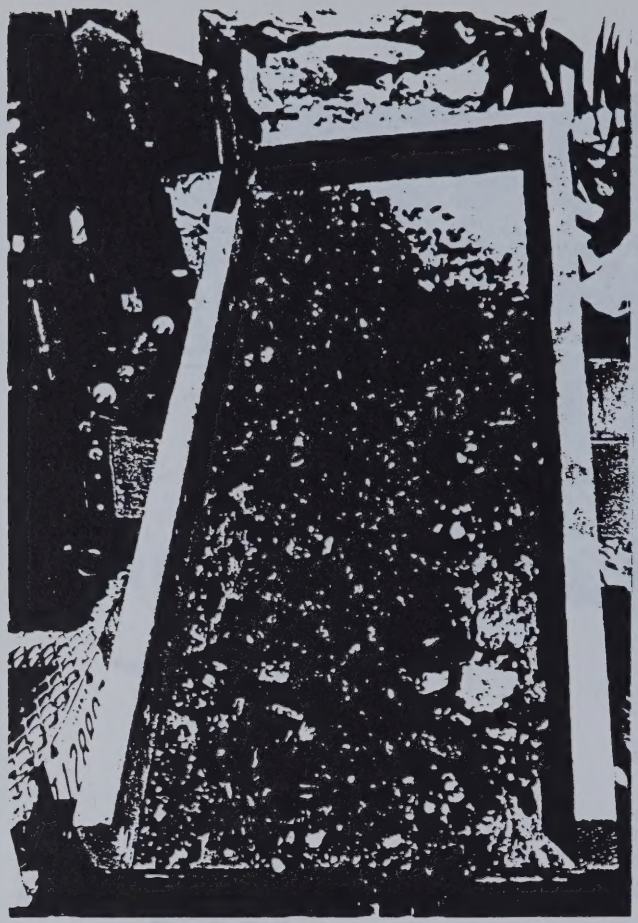


Photo 50. Coarse material being fed from the trommel on the Denver Gold Saver into the coarse chute on August 28, 1985. Material is from sample 13B, and was inspected for gold nuggets or gold-bearing quartz vein material. None were found.

Photo 51. Slurry from sample 13B in the Knudsen Bowl and in the safety tub. Photo taken August 28, 1985. The Knudsen Bowl is electric powered and driven by the portable generator. In sample 13A all of the gold was recovered in the Bowl. In sample 13B over 30% of the gold was recovered in the Bowl. See Table 3, and Photo 38.

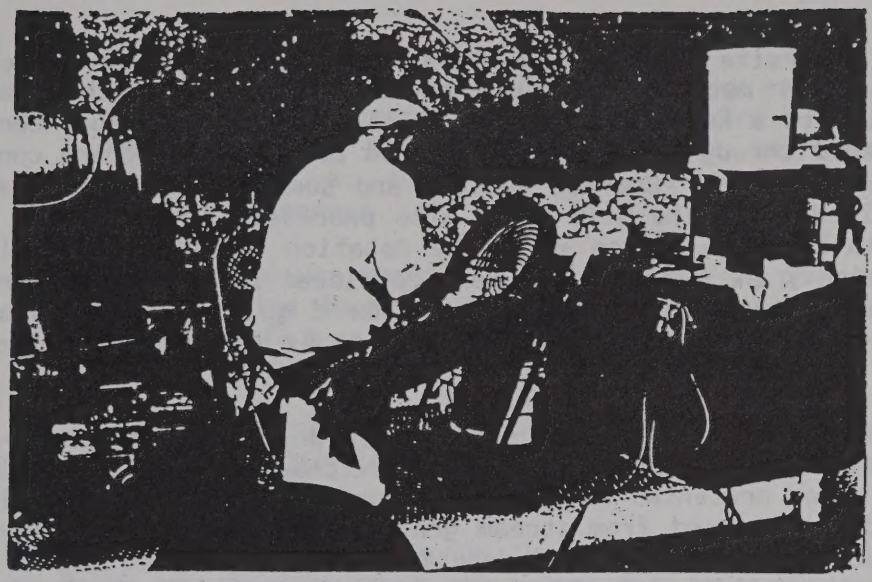
Photo 56. Cleaning rubber sluice mat concentrates from sample 13B into wash tub after test run. A sixteen inch pan is placed in the bottom of the tub under the mat. Photo taken or August 28, 1985.

Photo 57. Concentrates from Knudsen Bowl about to be passed over a 16 inch screen pan to remove "coarse" material. A sixteen inch pan is placed under the screen pan and the screen pan in then worked below the water surface. Coarse material was examined for gold nuggets. The sample shown is 13B on August 28, 1985.

Photo 58. After "coarse"cleaning and screening (shown on Photos 56 and 57) sluice and Knudsen Bowl concentrates are screened through a No. 10 mesh screen (ASTM). Material retained on the screen was examined for gold. The sample shown is 13B on August 28, 1985.

Photo 59. Washing the screened concentrate shown in Photo 58. Through a funnel into sample bottle on a safety pan on August 28, 1985.

Photo 60.



Photos 60 through 62 were taken on August 28, 1985 and show concentrates from sample 13B. Photo 60 shows BLM Mineral Examiner, J. Evans washing sample concentrate from jar shown in Photo 59 into the Gold Hound. The Hound is powered by electricity from the generator after going through a 6V battery charger which converts AC to DC current. Photo 61 is a close-up picture of the washing process. Photo 62 is also a close-up picture showing a coarse gold flake rising along the circular ribs toward the outlet pipe. The pipe feeds to a collection bucket on the back of the Hound.

Photo 61.

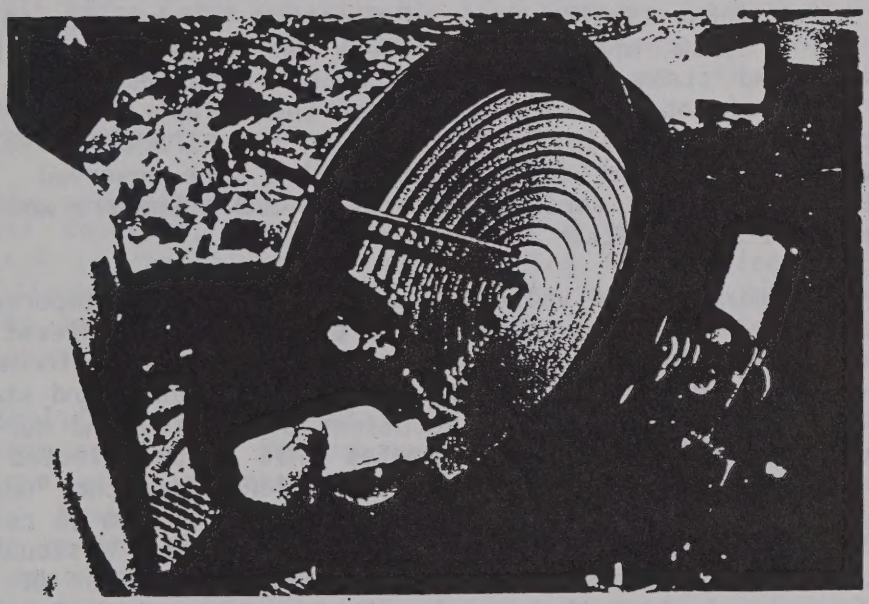
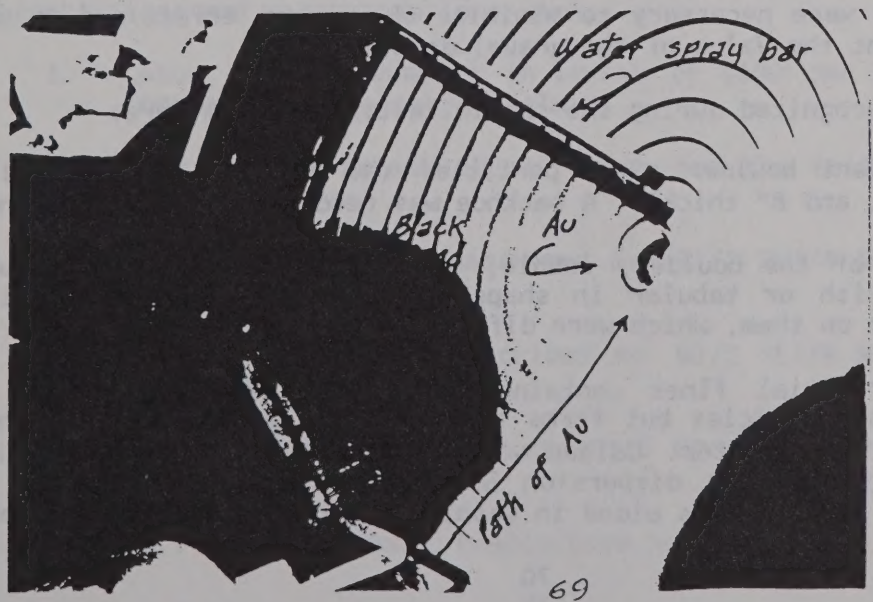


Photo 62.



coarse chute. Undersize is gravity-fed onto a vibrating rubber slice mat and then over a #4 mech screen to a chute. Material is then washed through the chute to a Knudsen Bowl. The sluice and Knudsen Bowl concentrates were washed through a screen and panned before placing the concentrate into a Gold Hound. Coarse, medium, and some fine gold are recovered in the Gold Hound. The Gold Hound also processes fine and very fine gold by amalgamation when set on a reverse rotation. Amalgamation, microscopic examinations, and calculations were completed in the Folsom Mineral Laboratory. Calculation indicated that recovered gold for the discovery sites yielded vales of $5.95 (GE No. 2) and $6.92 (GE No. 3) per cubic yard.

The claims were divided in half by the methods described in the 10-acre rule section of this report for mineral in character determinations. Mineral in character presented somewhat of a problem. We decided geologic inference could not be used from stream gravels to river terrace gravels, as they are two different types of deposits. Also, we declined to use slope wash for mineral in character. We determined that geologic inference could only be used for similar types of deposits. Therefore, in the S1/2 of the GE No. 1 claim, where the discovery was by dredging in Moccasin Creek, we panned steam gravels as a check. Numerous medium and fine flakes of gold were observed. The N1/2 of the GE No. 2 claim containing river terrace gravels similar to those in the S1/2 of the claim were panned. Numerous fine and a few medium flakes were observed. The north 1/2 of GE No. 3 did not contain any gravels and therefore was not tested for its mineral in character nature.

Critical to the determination of value for discovery were the importance of accurately determining the position, areal extent of, and elevations of the deposits on the claims. We chose to use telemetric methods of surveying the deposits and the claim discoveries using transit and stadia rod methods. This resulted in accurate locations of mineral and surface improvements on the claim and volume estimates that best reflected the true nature of the deposit. Another factor considered was the "nugget effect". The gold was found to be predominately flat, medium to coarse sized, and fairly even in distribution throughout the gravels; a situation conducive to possible variances in over or under evaluation of the deposit. Therefore, we decided that sample sizes on the order of 0.5 to 1.0 cubic yards were necessary to minimize the nugget effect and to more closely represent the value of the gravel deposit.

Other factors recognized during the sample testing program were:

- Abundant boulder sized particles (as much as 3' long, 11/2 wide, and 8" thick). A backhoe was needed for sample cutting.

- Most of the boulder, cobble, and pebble sized particles were flattish or tabular in shape. They had clay-bearing fines stuck on them, which were difficult to wash.

- Interstitial fines contained clay that not only sticks to coarse particles but forms clay balls from fine size to about 1/4" in diameter. Calgon was introduced into the Denver Gold Saver to cause dispersion and prevent the formation of the clay balls. This aided in washing the coarse particles clean.

- The minus 1/4" fraction also contained an abundance of flat particles that tended to pack the sluice and the ribs of the Knudsen Bowl. The sample had to be introduced slowly and uniformilly, as surging tended to cause packing, and more frequent cleanups.

- As the gold was generally flat and was in part medium and fine to very fine in size, it tended to ride over the sluice on the water surface. Fortunately, our Knudsen Bowl captured the sluice gold override.

- Water ran brown for long periods of time because of fines and clay in suspension. It was impossible to see material during this time.

Sampling also reflected the manner in which the deposit would be mined. It was found by sampling that the upper 3-9 feet of the river terrace deposit had a value considerably less than the lower 9-12 feet of gravels. We found that the claimant could move this material cheaper than processing it through the placer plant. Therefore, the lower river terrace gravels were targeted in our sampling, with spot sampling of the upper overburden layer.

In the economic evaluation of the claims, based on the sampling of the gravel deposits, the claimant saved from $2-3 per cubic yard of ore deposit in capital costs and servicing from owning her own equipment. The discoveries of the two claims may have been affected if she had to outlay large capital expenditures for the placer plant and excavation equipment.

A simplified cash flow analysis was conducted, which took into account factors related to the economic requirements to mine the deposit. Sufficient water was available from Moccasin Creek and a proposed holding pond. Most of the equipment needed was owned, without liens or attachments by the claimants associate. As a result, it was determined that the operation would net a positive cash flow.

Our conclusions and recommendations were:

1. Labor and improvements in excess of $500 per claim have been completed on the subject claims.

2. That mineral patent should issue for the following claims or portions thereof:

Golden Eagle No. 1 (all) described as: E1/2 SW1/4 NE1/4 Section 2, aggregating 20 acres;

Golden Eagle No. 2 (all) described as: W1/2 SE1/4 NE1/4 Section 2, aggregating 20 acres;

Golden Eagle No. 3 described as: S1/2 E1/2 SE1/4 NE1/4 Section 2, aggregating 10 acres;

All in T. 2 S., R. 15 E., Mount Diablo Base and Meridian.

3. The N1/2 of the Golden Eagle No. 3 (10 acres) is not mineral in character and, therefore, is not recommended for patent.

CONCLUSION

Development of the mineral resources on the public land pursuant to the General Mining Law, reflects the policy of the United States to allow free and open occupation and purchase of valuable mineral deposits on land open to location of a mining claim. Prior to gaining any rights under authority of that Act, one must "discover" a valuable mineral deposit following the guidance provided by Department of Interior and Court decisions (i.e., the prudent person and the marketability rule). No two deposits are operationally the same. Therefore, it is important that adequate field and laboratory techniques be utilized in obtaining data needed to economically evaluate the deposit for its quality and quantity of mineralization. Field procedures should be tailored to adequately represent, as near as practical, the grade and volume of the deposit. Testing of the samples should closely fit the method of recovery.

Individual prospectors, miners, government mineral examiners, and others responsible for ensuring compliance with the rules of discovery and mineral in character should possess a knowledge of the many aspects of field, laboratory, mining, processing, refining, environmental and mineral economics. Conditions are made complex by changing technical and market conditions. Evaluations of small gold deposits for the purpose of verifying discovery require strong professional skills.

SELECTED REFERENCES

Cummins, A.B., and Given I.A., etc., 1973, SME Mining Engineering handbook (in two volumes); Society of Mining Engineers, New York, NY, 35 sections of various length.

Evans, J.R., January 1983, Placer gold sampling, sample processing, and evaluation of results; Proceedings - Dredging and placer mining conference, Reno, NV, Nevada Institute of Technology, Reno, Nevada, 37 p., and 5 Attachments.

_____, Reid, R., February, 1984, Outline of the workshop on guidelines for validity examinations, California State Office; Bureau of Land Management, Sacramento, CA, 20 p., 12 Appendices.

Gentry, D.W., 1984, Economic evaluation and investment decision methods, fifth ed.; Investments Evaluations Corporation, Golden, CO 446 p.

Gy, P.M., 1981, Sec. Ed., Sampling of particulate materials, theory and practice; Elsevier, New York, 468 p.

Haskins, R.A., and Mullin, F.B., 1984, Field handbook for mineral examiners; U.S. Department of the Interior, Bureau of Land Management, Manual Supp. H-3890-1.

Maley, T.S., 1983, Handbook of mineral law, third Ed.; Mineral Land Publications, Boise, Idaho, 711 p.

_____, 1985, Mining law: from location to patent; Mineral Land Publications, Boise, Idaho 597 p.

Peters, W.C., 1978, Exploration and Mining Geology; John Wiley & Sons, Inc., New York, NY, 696 p.

Sternole, F.J., 1984, Economic evaluation and investment decision methods, fifth ed.; Investments Evaluation Corporation, Golden, CO, 446 p.

Wells, J.H., 1968, Placer examination - principles and practice; Bureau of Land Management Tech. Bull. 4, USDI, 209 p.

BLM Library
~~D-553A, Building 50~~
Denver Federal Center
P. O. Box 25047
Denver, CO 80225-0047

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

BLM Library
~~D-553A, Building 50~~
Denver Federal Center
P. O. Box 25047
Denver, CO 80225